

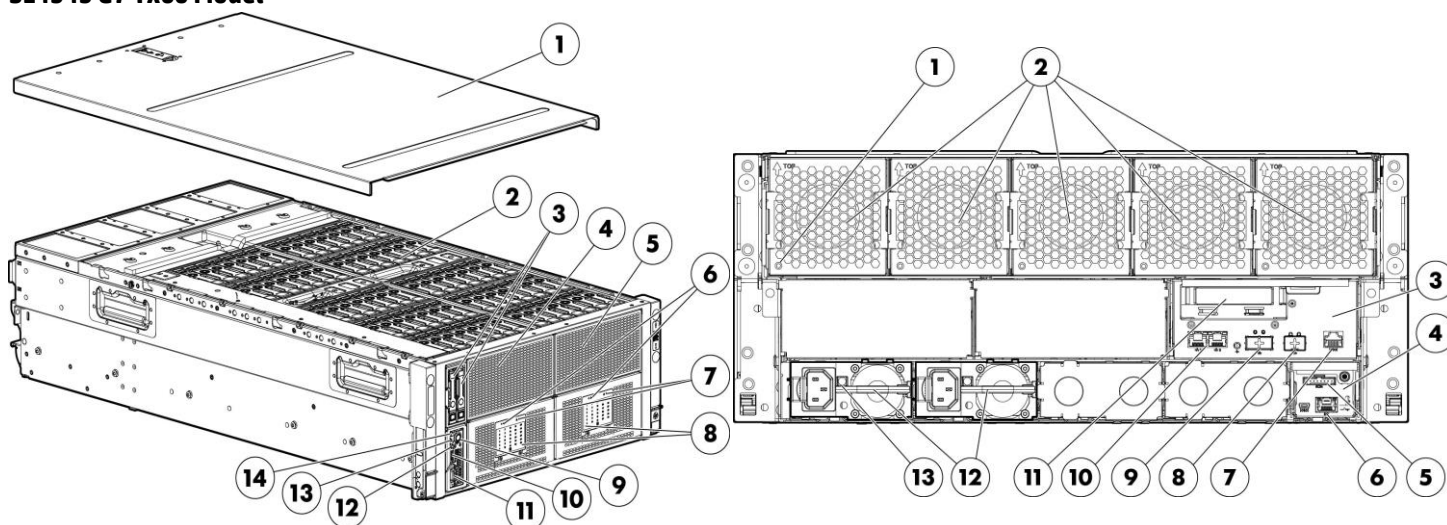
Overview

HP ProLiant SL4545 Generation7 (G7) Server

How are you going to scale out to petabytes with your current infrastructure?

Big data, largely unstructured such as messages, images, readings from sensors, and GPS signals from cell phones, are growing at an exponential rate. The HP ProLiant SL4545 G7 Server solves the traditional structured database problems when dealing with big data. Implementing a scale-out infrastructure will invariably result in challenges of data center capacity, spiraling energy costs, infrastructure complexity and inefficiencies because today's siloed infrastructure is not optimized for scale-out server workloads driven by big data. The SL4545 G7 Server is a server purpose-built for big data. A highly efficient converged design that delivers the right combination of capacity and performance, in the least amount of space and at a lower cost.

SL4545 G7 1x60 Model



SL4545 G7 1x60 Model Front View:

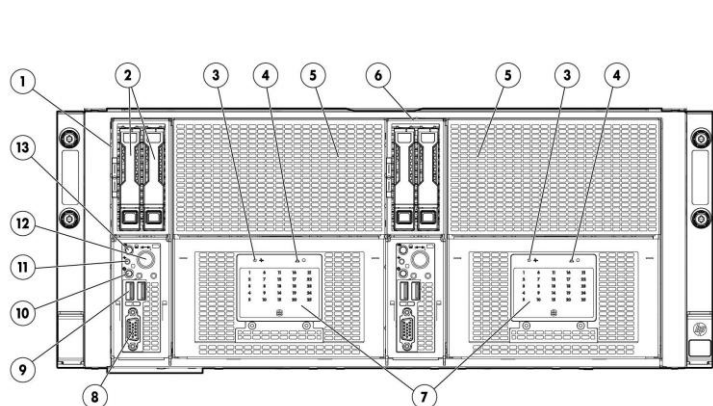
1. Hood Cover
2. LFF 3.5" hard drives (60)
3. SFF 2.5" hard drives on node (2)
4. LFF hard drives (30) connected to storage controller (Port 1i)
5. LFF hard drives (30) connected to storage controller (Port 2i)
6. Hard drive backplane health LED
7. Storage UID
8. Hard drive LED display boards
9. Node ejection button
10. Node USB connectors (2)
11. Node video connector (VGA port)
12. Node power ON/Standby button and system power LED
13. Node health LED
14. Node UID LED button

SL4545 G7 1x60 Model Rear View:

1. Fan LED
2. System fans
3. I/O Module
4. Management Module
5. SL Advanced Power Manager Distribution Module (SL-APMD)connector
6. iLO connector
7. Serial Port
8. 10Gb Ethernet SFP+ port
NOTE: Available only when 10G I/O module is ordered. 1G I/O Module has 2x1Gb Ethernet ports only.
9. 10Gb Ethernet QSFP port
NOTE: Available only when 10G I/O module is ordered. 1G I/O Module has 2x1Gb Ethernet ports only.
10. 2 X 1Gb Ethernet ports
11. Low profile PCI express slot
NOTE: Available only when the optional HP SL454x Storage Mezzanine to PCIe Enablement Kit is ordered
12. Power supplies
13. Power supply LED

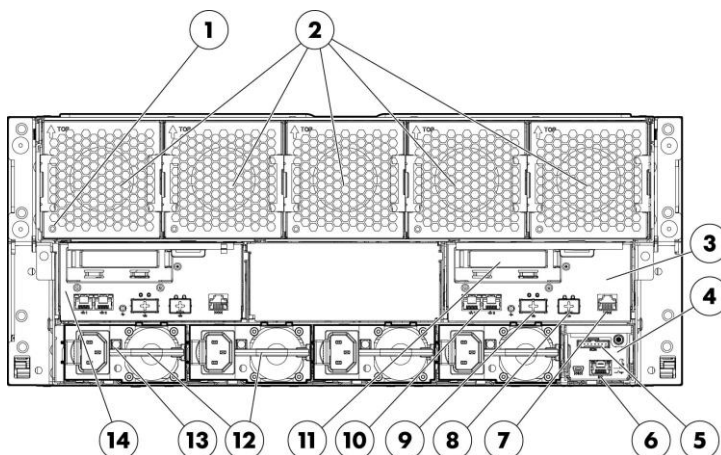
SL4545 G7 2x25 model

Overview



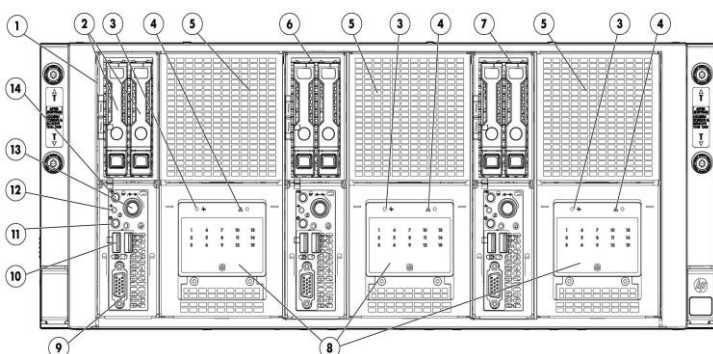
SL4545 G7 2x25 Model Front View:

1. Server Node 1
2. SFF 2.5" hard drives on node (2)
3. Hard drive backplane health LED
4. Storage UID
5. LFF hard drives
6. Server Node 2
7. Hard drive LED display boards
8. Node video connector (VGA port)
9. Node USB connectors (2)
10. Node power ON/Standby button and system power LED
11. Node health LED
12. Node eject button
13. Node UID LED button



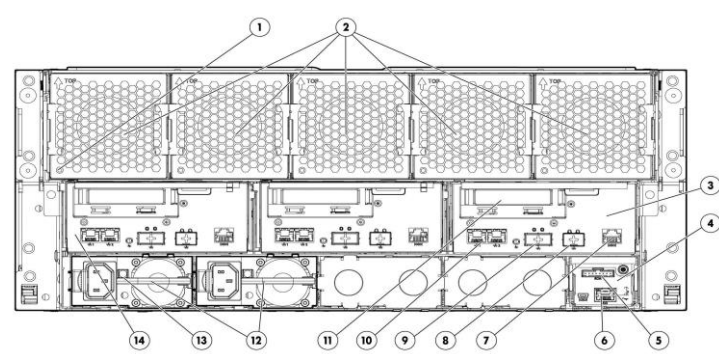
SL4545 G7 2x25 Model Rear View:

1. Fan LED
2. System fans
3. I/O Module Server Node 1
4. Management Module
5. SL Advanced Power Manager Distribution Module (SL-APMD) connector
6. iLO connector
7. Server Serial Port
8. 10Gb Ethernet SFP+ port
NOTE: Available only when 10G I/O module is ordered. 1G I/O Module has 2x1Gb Ethernet ports only.
9. 10Gb Ethernet QSFP port
NOTE: Available only when 10G I/O module is ordered. 1G I/O Module has 2x1Gb Ethernet ports only.
10. 2 X 1Gb Ethernet ports
11. Low profile PCI express slot
NOTE: Available only when the optional HP SL454x Storage Mezzanine to PCIe Enablement Kit is ordered
12. Power supplies
13. Power supply LED
14. I/O Module Server Node 2



SL4545 G7 3x15 Model Front View:

1. Server Node 1
2. SFF 2.5" hard drives on node (2)
3. Hard drive backplane health LED
4. Storage UID



SL4545 G7 3x15 Model Rear View:

1. Fan LED
2. System fans
3. I/O Module Server Node 1
4. Management Module

Overview

5. LFF hard drives connected to Server Node 1 (15)
6. Server Node 2
7. LFF hard drives connected to Server Node 2 (15)
8. Server Node 3
9. LFF hard drives connected to Server Node 3 (15)
10. Hard drive LED display boards
11. Node video connector (VGA port)
12. Node USB connectors (2)
13. Node power ON/Standby button and system power LED
14. Node health LED
15. Node ejection button
16. Node UID LED button
5. SL Advanced Power Manager Distribution Module (SL-APMD) connector
6. iLO connector
7. Serial Port
8. 10Gb Ethernet SFP+ port
NOTE: Available only when 10G I/O module is ordered. 1G I/O Module has 2x1Gb Ethernet ports only.
9. 10Gb Ethernet QSFP port
NOTE: Available only when 10G I/O module is ordered. 1G I/O Module has 2x1Gb Ethernet ports only.
10. 2 X 1Gb Ethernet ports
11. Low profile PCI express slot
NOTE: Available only when the optional HP SL454x Storage Mezzanine to PCIe Enablement Kit is ordered
12. Power supplies
13. Power supply LED
14. I/O Module Server Node 3

What's New

- Updating supported options.

Standard Features

NOTE: For the Standard Features shipped in the Factory Integrated Models, please see the "Configuration Information - Factory Integrated Models" section.

Processor One model of the following per server node	Eight-Core Processors AMD Opteron™ 4284 (3.0GHz/8-core/8MB/95W) Processor AMD Opteron™ 4274 HE (2.5GHz/8-core/8MB/65W) Processor Six-Core Processors AMD Opteron™ 4238 (3.3GHz/6-core/8MB/95W) Processor AMD Opteron™ 4226 (2.7GHz/6-core/8MB/95W) Processor NOTE: DDR3 speed is the maximum memory speed of the processor. Actual memory speed may depend on the quantity and type of DIMMs installed (options for 1600, 1333MHz). NOTE: Up to 2 processors supported. Mixing different processor models is not supported.	
Cache Memory	8MB (1x8MB) Level 3 Cache NOTE: For Eight-core processors. Cache is per socket.	
Chipset	AMD® SR5690 Chipset Based Reference Design AMD Opteron™ 4200 Series Processor Family NOTE: For more information regarding AMD chipsets, please see the following URL: http://www.amd.com/us/products/Pages/chipsets.aspx	
Upgradeability	Upgradeable to two processors	
On System Management Processor	HP iLO (Firmware: HP iLO 3) NOTE: For more information, visit: http://www.hp.com/go/ilo .	
Memory Protection	Advanced ECC (multi-bit error protection)	
Memory Dedicated to each server node	Type	HP SmartMemory DDR3 Registered (RDIMM), Ultra Low Voltage DIMMs (ULVDIMM)
	DIMM Slots Available	12 DIMM Slots available
	Maximum (RDIMM/ULVDIMM) (per server tray)	192GB (12 x 16GB) Registered memory configurations
	NOTE: For additional information, please see the HP SmartMemory QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/14225_div/14225_div.html NOTE: RDIMMs and ULVDIMMs are all distinct memory technologies and cannot be mixed within a server. The majority of AMD based servers support RDIMM and ULVDIMM. NOTE: Depending on the memory configuration and processor model, the memory speed may run at 1600MHz or 1333MHz. Please see the Online Memory Configuration Tool at: www.hp.com/go/ddr3memory-configurator .	
Network Controller One of the following dedicated to each server node	HP Ethernet 1Gb 2-port 362i HP Ethernet 1Gb 2-port 362i and HP Ethernet 10Gb 2P 544i Adapter NOTE: Dual port ConnectX-3 10GbE or QDR IB.	

Expansion Slots

Primary Riser Dedicated to	Expansion Slots #	Technology	Bus Width*	Connector Width	Form Factor	Notes
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Standard Features

each server node	1	PCIe 2.0	X8	X8	Low profile slot
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*Indicates the number of physical electrical lanes running to the connector.

NOTE: One PCIe 2.0 low profile expansion slot is enabled by HP Svr Storage Mezz to PCIe Option Kit 682632-B21 for adding one of the expansion options including an HP IO accelerator, networking options or external storage controller options.

NOTE: Expansion Slot is hosted in the I/O Module.

HP Server ROM

HP ROM (Read Only Memory) is now digitally signed using HP's Corporate Signing Service. This signature is verified before the flash process starts, reducing accidental programming and preventing malicious efforts to corrupt system ROM.

HP ROM provides for essential initialization and validation of hardware components before control is passed to the customer-installed operating system. The ROM also provides the capability of booting from various fixed media (HDD, CD-ROM) and removable media (USB), to continue operation to the operating system.

HP ROM performs very early configuration of the video controller, to allow monitoring of initialization progress via an attached monitor. If configuration or hardware errors are discovered during this early phase of hardware initialization, suitable messages are now displayed on the connected monitor. Additionally, these configuration or hardware errors are logged to the Integrated Management Log (IML) to assist in diagnosis.

HP's ProLiant ROM is used to configure the following:

- Processor and chipset status registers
- System memory, memory map, and memory initialization
- System hardware configuration (Integrated PCI devices and optional PCIe cards).
- Customer-specific BIOS configuration (using the HP ROM-Based Setup Utility (RBSU).

NOTE: For further information, please refer to HP's RBSU (ROM based setup utility) user guide: www.hp.com/support/rbsu.

Storage Controllers

Dedicated to each server node

HP Dynamic Smart Array B110i SATA RAID

NOTE: HP Dynamic Smart Array B110i SATA RAID is located on the server node and controls only the two small form factor (SFF/2.5") hard drives on the server node itself.

NOTE: HP Smart Array P420i is located in the I/O Module, which is located at the rear of the SL4545 chassis and controls the large form factor (LFF/ 3.5") hard drives.

Internal Storage Devices

Diskette Drive	Via USB port, external support only
Optical Drive	Via USB port, external support only
Hard Drives	None ship standard
Drive Bays	2 SFF drive bays total for each server node 60 LFF drive bays total in chassis for a 1x60 model 50 LFF drive bays total in chassis for a 2x25 model 45 LFF drive bays total in chassis for a 3x15 model

Maximum Internal Storage

1x60 Model - 60 LFF Drives per node

Hot Plug LFF SAS	240.0TB	60 x 4TB
Hot Plug LFF SATA	240.0TB	60 x 4TB
Hot Plug SFF SATA	2.0TB	2 x 1TB
Hot Plug LFF SATA SSD	48.0TB	60 x 800GB

Standard Features

Hot Plug SFF SATA SSD 1.6TB 2 x 800GB

NOTE: The node contains two SFF (2.5") hard drive bays on the front of the server.

NOTE: The main storage section in the chassis has 60 LFF (3.5") hard drive bays and they can be populated with any combination of SAS, SATA, or SATA SSD drives to achieve desired performance.

2x25 Model - 25 LFF Drives per node

Hot Plug LFF SAS 200.0TB 50 x 4TB

Hot Plug LFF SATA 200.0TB 50 x 4TB

Hot Plug SFF SATA 4.0TB 4 x 1TB

Hot Plug LFF SATA SSD 40.0TB 50 x 800GB

Hot Plug SFF SATA SSD 3.2TB 4 x 800GB

NOTE: Each node contains two SFF (2.5") hard drive bays on the front of the node.

NOTE: The main storage section in the chassis has 50 LFF (3.5") hard drive bays, 25 bays per node, and they can be populated with any combination of SAS, SATA, or SATA SSD drives to achieve desired performance.

3x15 Model - 15 LFF Drives per node, 45 LFF Drives per chassis

Hot Plug LFF SAS 180.0TB 45x 4TB

Hot Plug LFF SATA 180.0TB 45 x 4TB

Hot Plug SFF SATA 6.0TB 6 x 1TB

Hot Plug LFF SATA SSD 36.0TB 45 x 800GB

Hot Plug SFF SATA SSD 4.8TB 6 x 800GB

NOTE: Each node contains two SFF (2.5") hard drive bays on the front of the node.

NOTE: The main storage section in the chassis has 45 LFF (3.5") hard drive bays, 15 bays per node, and they can be populated with any combination of SAS, SATA, or SATA SSD drives to achieve desired performance.

Interfaces

Dedicated to each server node

Network RJ-45

Two 1GbE NIC ports (available in both 1GbE and 10GbE I/O Module)

NOTE: Only one of either the 1GbE I/O Module or 10GbE I/O Module can be connected to the node.

SFP+ connector

One 10GbE SFP+ connector

NOTE: 10GbE SFP+ and 10GbE/40GbIB QSFP are additional networking interfaces available using optional 10GbE I/O Module.

QSFP connector

One 10GbE/40GbIB QSFP connector

NOTE: 10 Gb Ethernet on the QSFP port requires the use of the QSFP to SFP+ adapter 655874-B21

NOTE: IB supported with addition of HP IB Enablement Kit

USB

2 front (external)

Serial

1 rear (external on I/O Module)

Video

1 front (external)

USB Ports

1 (internal)

HP iLO Remote Management Network Port

10/100 Mb Dedicated (Optionally a 1GbE port can be dedicated to iLO)

NOTE: Management port is shared

Health LED

2 front

Power

1 front

UID for node

1 front per node and 1 rear on management module

UID for storage

1 per display board

Industry Standard

ACPI 2.0b Compliant

Standard Features

Compliance	PCIe 2.0 Compliant WOL Support Microsoft® Logo certifications PXE Support USB 1.1 and 2.0 Compliant SMBIOS 2.6.1
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Server Power Cords	One 6' Highline (IEC-IEC) power cord ships standard NOTE: HP ProLiant SL servers are primarily connected to PDU's in data center racks so they ship standard with only a PDU power cord (416151-B21). If a user wishes to power a ProLiant SL server using a 110V receptacle (NEMA-15), the NEMA power cord must be ordered separately.
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NOTE: If customers require a local power cord, they can check the power cord matrix for the appropriate cord. Please see the following power cord matrix:
<http://www.hp.com/go/powercordmatrix>.

Power Specifications	To review typical system power ratings use the HP Power Advisor which is available via the online tool located at URL: www.hp.com/go/proliant-energy-efficient or www.hp.com/go/hppoweradvisor .
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NOTE: Power Specification and Technical Content for supported power supplies can be found at:
http://h18000.www1.hp.com/products/quickspecs/14209_div/14209_div.html

Common Slot Power Supply	HP's Common Slot (CS) power supplies allow for commonality of power supplies across a wide range of ProLiant and Integrity servers, as well as HP Storage solutions, and are designed to provide the highest power supply efficiency without degrading system performance. HP CS power supplies are tested by the Electric Power Research Institute (EPRI) and certified through the ECOS 80 Plus power supply program. HP CS power supply options provide efficiency ratings of up to 94% and are available in two power output options - 750W, and 1200W - allowing the user to "right-size" a power supply for their specific server configuration. All HP Common Slot power sources are UL, CE Mark Compliant, hot-plug and support redundant configurations. It is highly recommended that you use the HP Power Advisor in defining the "Right-Size" power supply for your needs. HP Power Advisor can be accessed at: www.hp.com/go/hppoweradvisor .
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NOTE: Mixing of power supplies in the same server is not supported. All power supplies must be of the same output and efficiency rating. If non-matched power supplies are inserted you will get errors and operation will fail.

NOTE: The 80 PLUS program is a unique forum that unites electric utilities, the computer industry, and consumers in an effort to bring energy efficient technology solutions to the marketplace. 80 Plus independently tests power supply efficiency and publicly posts the results on www.80Plus.org.

NOTE: Redundant Power: Optional redundant power supplies can be purchased through power supply option kits (see Power Supplies for part numbers).

System Fans	System ships standard with 5 Dual fan modules.
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Operating Systems and Virtualization Software Support for ProLiant Servers	Microsoft Windows Server Red Hat Enterprise Linux (RHEL) SUSE Linux Enterprise Server (SLES) NOTE: Only 64-bit versions of these operating systems are supported. NOTE: For more information on HP's Certified and Supported ProLiant Servers for OS and Virtualization Software and latest listing of software drivers available for your server including how to purchase
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Standard Features

from HP, please visit our OS Support Site at: <http://www.hp.com/go/ossupport> and our driver download page: <http://www.hp.com/support/SL4545G7>.

Graphics	ATI RN50 integrated with 32MB memory	
Form Factor	4.3U form factor NOTE: Can be racked as either a 5U tall chassis or as three chassis in 13U	
On System Management	HP Integrated Lights-Out (iLO) for ProLiant	<p>HP Integrated Lights-Out (iLO) management processors for HP ProLiant servers virtualizes system controls to help simplify server setup, engage health monitoring and power and thermal control, and promote remote administration of HP ProLiant servers. HP iLO functions out-of-the-box without additional software installation and functions regardless of the servers' state of operation. Basic system board management functions, diagnostics, and essential Lights-Out functionality is ship standard. The HP iLO can be accessed from any location via a web browser and works hand-in-hand with HP Systems Insight Manager, Insight Control, and Insight Dynamics, helping customers unleash the value of the ProLiant platform and deliver the highest possible quality of IT service to the business.</p> <p>Advanced functionality, such as graphical remote console, multi-user collaboration, and video record/playback can be activated with the optional HP iLO Advanced or HP iLO Advanced for BladeSystem licenses. The Advanced licensed features offer sophisticated remote administration of servers in dynamic data center and remote locations and can help significantly reduce cost associated with IT-related travel and unplanned downtime.</p> <p>NOTE: For more information, visit: http://www.hp.com/go/ilo or how to buy an HP iLO Advanced License visit www.hp.com/buy/ilo</p> <p>Download HP iLO 3 firmware - www.hp.com/support/ilo3</p>
HP Insight Management	HP Service Pack for ProLiant	<p>HP Service Pack for ProLiant (SPP) and HP Smart Update Manager (HP SUM) provide a comprehensive approach to firmware and system software maintenance. Together they provide better operating stability and ensure maximum uptime. The SPP will be updated at a predictable cadence, typically coinciding with new HP server hardware launches. By enabling firmware to be updated online and integrating firmware and system software updates in one operation, HP SUM and the SPP offer faster updates of individual servers and dramatically faster updates of entire BladeSystem enclosures. Further improving system uptime and stability is the fact that HP provides 12 months of support for each Service Pack for ProLiant release.</p> <p>The user experience around HP SUM and the SPP has been improved in several ways, starting with the web download. A single web page provides access to a single download containing both the latest version of HP SUM and the latest SPP. Optional smaller subsets with only specific types of servers or specific operating systems are offered to save on download time. The HP SUM application provides a straightforward, intuitive user interface that guides the user through the steps of discovery, analyses and update, providing comprehensive information on available updates, criticality and interdependencies. This information is also available in</p>

Standard Features

reports. By providing the option of multiple local or shared repositories which can be easily updated from hp.com, HP SUM provides the tools to optimize stability and consistency throughout the company. While HP SUM and the SPP recommend the combinations of firmware and system software that HP has found to be the best practice, the application gives customers the flexibility to set their own specific baseline.

The Service Pack for ProLiant has been rigorously tested with specific attention for interaction between firmware, drivers and agents both within the server as well as in interaction with the BladeSystem enclosure components (Onboard Administrator and Virtual Connect). This testing ensures the highest quality as well as providing the input for HP SUM to deploy updates taking into account all interdependencies, when determining the correct updates and order of update deployment.

NOTE: The Service Pack for ProLiant (which includes HP SUM) can be downloaded from www.hp.com/go/spp/download. More information can be found: <http://www.hp.com/go/SmartUpdate>, www.hp.com/go/spp and <http://www.hp.com/go/hpsum>

Security

Power-on password
Keyboard password
QuickLock, Network Server Mode
Serial interface control
Administrator's password
iLO 3 (Integrated Lights-Out 3) has 12 customizable user accounts and SSL encryption
iLO 3 can be disabled via a Global Setting
iLO Advanced supports directory services integration

Warranty

This product is covered by a global limited warranty and supported by HP Services and a worldwide network of HP Authorized Channel Partners. Hardware diagnostic support and repair is available for one year from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Enhancements to warranty services are available through HP Care Pack services or customized service agreements. Hard drives have either a one year or three year warranty.

NOTE: Server Warranty includes 1 year Parts, 1 year Labor, 1-year on-site support with next business day response. Warranty repairs may be accomplished through the use of Customer Self Repair (CSR) parts. These parts fall into two categories: 1) Mandatory CSR parts are designed for easy replacement. A travel and labor charge will result when customers decline to replace a Mandatory CSR part; 2) Optional CSR parts are also designed for easy replacement but may involve added complexity. Customers may choose to have HP replace Optional CSR parts at no charge. Additional information regarding worldwide limited warranty and technical support is available at: <http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html>.

Optional Features

HP Insight management	HP Insight Control	<p>HP Insight Control, a product option, delivers essential infrastructure management that can help save time and money by making it easy to deploy, migrate, monitor, remote control, and optimize your IT infrastructure through a single, simple management console. For more information, see http://www.hp.com/go/insightcontrol.</p> <p>HP Insight Control includes one year of 24 x 7 HP Software Technical Support and Update Service ensuring rapid access to HP support staff and proactive delivery of software updates. For more information about this service, see: http://www.hp.com/services/insight.</p>
	HP iLO Advanced	<p>HP Integrated Lights-Out Advanced License a product option, providing smart remote server management without compromise. iLO Advanced unlocks the full set of remote administration functionality for all HP ProLiant servers by activating the full Virtual Keyboard Video and Mouse remote console, multi-user collaboration, console record and replay, GUI-based and scripted virtual media and virtual folders, and enhanced security and power management functionality. For more information, see: http://www.hp.com/go/iloadvance</p>
	HP Matrix Operating Environment	<p>The HP Matrix Operating Environment (Matrix OE) for ProLiant and Integrity servers is an integrated command center that helps you instantly adjust to dynamic business demands. This advanced infrastructure management software lets you reduce the cost of common data center tasks by up to 40 percent while keeping pace with your changing business.</p> <p>The HP Matrix OE includes the automated provisioning, optimization, and recovery management capabilities for HP CloudSystem Matrix, the ideal platform for private cloud and Infrastructure as a Service (IaaS).</p> <p>NOTE: For more information, visit: http://www.hp.com/go/matrixoe</p>
High Performance Clusters	HP Cluster Platforms	<p>HP Cluster Platforms are specifically engineered, factory-integrated large-scale ProLiant clusters optimized for High Performance Computing, with a choice of servers, networks and software. Operating system options include specially priced offerings for Red Hat Enterprise Linux and SUSE Linux Enterprise Server, as well as Microsoft Windows HPC Server. A Cluster Platform Configurator simplifies ordering. http://www.hp.com/go/clusters</p>
	HP Insight Cluster Management Utility	<p>HP Insight Cluster Management Utility (CMU) is an HP-licensed and HP-supported suite of tools that are used for lifecycle management of hyperscale clusters of Linux ProLiant systems. CMU includes software for the centralized provisioning, management and monitoring of nodes. CMU makes the administration of clusters user friendly, efficient, and effective. http://www.hp.com/go/cmu</p>
HP Insight Online	<p>HP Insight Online is a new addition to the HP Support Center for one stop, secure access to product and HP support information personalized to your IT environment. Insight Online can automatically display devices remotely monitored by HP Insight Remote Support. With Insight Online's easy navigation you can efficiently track your IT support contracts and device status from anywhere and at anytime. www.hp.com/go/insightonline</p>	
Factory Express Portfolio for Servers and Storage	<p>HP Factory Express offers configuration, customization, integration and deployment services for HP servers and storage products. Customers can choose how their factory solutions are built, tested, integrated, shipped and deployed.</p>	

Optional Features

Factory Express offers service packages for simple configuration, racking, installation, complex configuration and design services as well as individual factory services, such as image loading, asset tagging, and custom packaging. HP products supported through Factory Express include a wide array of servers and storage: HP Integrity, HP ProLiant, HP ProLiant Server Blades, HP BladeSystem, HP 9000 servers as well as the MSAxxxx, VA7xxx, EVA, XP, rackable tape libraries and configurable network switches.

For more information on Factory Express services for your specific server model please contact your sales representative or go to: <http://www.hp.com/go/factory-express>.

HP Simple Configurator

SCE is a guided self service tool to help sales and non technical people provide customers with initial configurations in 3 to 5 minutes. You may then send the configuration on for configuration help, or use in your existing ordering processes. If you require "custom" rack configuration or configuration for products not available in SCE, please contact HP's Customer Business Center or an Authorized Partner for assistance. <http://www.hp.com/products/configurator>

Service and Support

Service and Support

HP Technology Services for Industry Standard Servers

HP Technology Services delivers confidence, reduces risk and helps customers realize agility and stability. Connect to HP to help prevent problems and solve issues faster. Our support technology lets you tap into the knowledge of millions of devices and thousands of experts to stay informed and in control, anywhere, any time.

Protect your business beyond warranty with HP Care Pack Services

HP Care Pack Services enable you to order the right service level, length of coverage and response time as you purchase your new server, giving you full entitlement for the term you select.

Optimized Care

Supports maintaining servers at optimum performance availability HP Proactive Care with 24x7 coverage, three year Care Pack Service

HP Proactive Care helps prevent problems and stabilize IT by utilizing secure, real-time, predictive analytics and proactive consultations when your products are connected to HP. This Care Pack Service combines three years' proactive reporting and advice with our 24x7 coverage and enhanced escalation management, four hour hardware response time and two hour call back for software questions on leading industry standard software running on your HP ProLiant server.

<http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA3-8855ENW.pdf>

Standard Care

Supports maintaining high level of server availability

Foundation Care 24x7, three-year Care Pack Service

HP Foundation Care 24x7 connects you to HP 24 hours a day, seven days a week for assistance on resolving issues. Hardware onsite response within four hours if needed; collaborative software included in this Care Pack service provides troubleshooting assistance on industry leading software running on your HP server. Simplify your support experience and make HP your first call for hardware or software questions.

<http://h20195.www2.hp.com/V2/GetDocument.aspx?docname=4AA4-8876ENW&cc=us&lc=en>

Related Services

HP ProLiant Server Hardware Installation

Provides for the basic hardware installation of HP branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-9356EN.pdf>

Factory Express for Servers and storage

HP Factory Express offers configuration, customization, integration and deployment services for HP servers and storage products. Customers can choose how their factory solutions are built, tested, integrated, shipped and deployed. For more information on Factory Express services for your specific server model please contact your sales representative or go to:

<http://www.hp.com/go/factory-express>.

Data Privacy Services

Protect your data through better media management. HP Data privacy services help manage and protect sensitive data to reduce the risk of unauthorized access to private information and help meet compliance requirements. Our retention services allow you to keep drives and other devices upon failure, our removal services provide convenient data sanitization and our recovery services allow you to safely retire IT assets and capture any remaining value from the hardware. www.hp.com/services/dataprivacy

Additional HP Care Pack services can be found at: <http://www.hp.com/go/cpc>

Service and Support

Get connected to HP to improve your support experience

Prevent problems with innovative, automated monitoring tools and proactive services. Combining Proactive Care Services with our remote support technology such as Insight Online provides you with expert advice and personalized, cloud-based automated IT support, helping to prevent unplanned down time and solve problems quickly. For more information, visit:

www.hp.com/go/proactiveinsightexperience

Parts and Materials

HP will provide HP-supported replacement parts and materials necessary to maintain the covered hardware product in operating condition, including parts and materials for available and recommended engineering improvements.

Parts and components that have reached their maximum supported lifetime and/or the maximum usage limitations as set forth in the manufacturer's operating manual, product quick-specs, or the technical product data sheet will not be provided, repaired, or replaced as part of these services.

The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by HP due to malfunction.

HP Support Center

Personalized online support portal with access to information, tools and experts to support HP business products. Submit support cases online, chat with HP experts, access support resources or collaborate with peers. Learn more <http://www.hp.com/go/hpsc>

HP's Support Center Mobile App* allows you to resolve issues yourself or quickly connect to an agent for live support. Now, you can get access to personalize IT support anywhere, anytime. HP Insight Remote Support and HP Support Center are available at no additional cost with a HP warranty, HP Care Pack or HP contractual support agreement.

*HP' Support Center Mobile App is subject to local availability

Warranty / Service Coverage

For ProLiant servers and storage systems, the services cover HP-branded hardware options qualified for the server, purchased at the same time or afterward, internal to the enclosure, as well as external monitors up to 22" and tower UPS products; these items will be covered at the same service level and for the same coverage period as the server unless the maximum supported lifetime and/or the maximum usage limitation has been exceeded. Coverage of the UPS battery is not included; standard warranty terms and conditions apply.

The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by HP due to malfunction. It does not apply to any exchange of Disk or SSD/Flash Drives that have not failed. SSD/Flash Drives that are specified by HP as consumable parts and/or that have exceeded maximum supported lifetime and/or the maximum usage limit as set forth in the manufacturer's operating manual or the technical data sheet are not eligible for the defective media retention service feature option.

For more information

To learn more on HP ProLiant servers and HP BladeSystem servers, please contact your HP sales representative or HP Authorized Channel Partner. Or visit: <http://www.hp.com/services/proliant>

Configuration Information - Factory Integrated Models

NOTE: This section lists some of the steps required to configure a Factory Integrated Model. To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for information on configurable product offerings and requirements.

NOTE: Factory Integrated Models must start with a CTO Server.

NOTE: FIO indicates that this option is only available as a factory installable option.

NOTE: All Factory Integrated Models will be populated with sufficient hard drive blanks based on the number of initial hard drives ordered with the server.

NOTE: Rack option is required to be the 1200mm deep rack to provide space for cable management arm and PDU

Step 1: Base Configuration (choose one of the following configurable models)

HP Chassis - 1x60 model	HP ProLiant SL454x 1x Node Chassis NOTE: Standard 5 dual fan modules included along with chassis. NOTE: Supports 60 LFF drives. One node total.	663600-B21
HP Chassis - 2x25 model	HP ProLiant SL454x 2x Node Chassis NOTE: Standard 5 dual fan modules included along with chassis. NOTE: Supports 50 LFF drives with up to 25 per node. Two nodes total	663600-B22
HP Chassis - 3x15 model	HP ProLiant SL454x 3x Node Chassis NOTE: Standard 5 dual fan modules included along with chassis. NOTE: Supports 45 LFF drives with up to 15 per node. Three nodes total	663600-B23
HP Power Supplies	NOTE: Prior to making a power supply selection it is highly recommended that the HP Power Advisor is run to determine the right size power supply for your server configuration. The HP Power Advisor is located at: www.hp.com/go/hppoweradvisor HP Common Slot Platinum Plus Power Supply Kits NOTE: The following power supplies offer up to 94% efficiency. HP 750W Common Slot Platinum Plus Hot Plug Power Supply Kit HP 1200W Common Slot Platinum Plus Hot Plug Power Supply Kit HP Common Slot Gold Power Supplies NOTE: The following power supplies offer up to 92% efficiency. HP 750W Common Slot Gold Hot Plug Power Supply Kit NOTE: Kits contain optional power supply, an IEC power cable and PDU IEC cables.	656363-B21 656364-B21 512327-B21
HP Rail Kits	NOTE: One Rail Kit is required for every chassis in a rack. HP 4.3U Server Rail Kit HP 0.66U Spacer Blank Kit NOTE: A Spacer Blank kit may be ordered to make an even 5U (4.3U+0.66U) spacing in a rack. This would enable racking of up to 8 chassis in a 42U rack. It is also possible to rack up to 9 chassis in a 42U rack using an additional dense racking option kit. The Spacer Blank kit is not used when the dense racking option HP 13U FIO Rack Adapter Kit for 3x4.3U Chassis is used	681254-B21 681260-B21

Step 2: Choose Required Node Options (only one of the following from each list unless otherwise noted)

HP Processors	NOTE: If 2 processor servers are desired, select one xxxxx-L21 and one matching xxxxxx-B21 for every processor option chosen per node
HP Memory	NOTE: Please choose memory options for socket 2 of each server node. Up to 6DDR3 DIMM slots dedicated per socket. NOTE: For additional information, please see the HP SmartMemory QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/14225_div/14225_div.html NOTE: RDIMMs and ULVDIMMs are all distinct memory technologies and cannot be mixed within a server. The majority of AMD based servers support RDIMM and ULVDIMM.

Configuration Information - Factory Integrated Models

NOTE: Depending on the memory configuration and processor model, the memory speed may run at 1600MHz or 1333MHz. Please see the Online Memory Configuration Tool at: www.hp.com/go/ddr3memory-configurator.

Registered DIMMs (RDIMM)

HP 4GB (1x4GB) Single Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647871-B21
HP 8GB (1x8GB) Dual Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647877-B21
HP 16GB (1x16GB) Dual Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647883-B21

Ultra Low Voltage DIMM (ULVDIMM)

HP 4GB (1x4GB) Single Rank x4 PC3U-10600R (DDR3-1333) Registered CAS-9 Ultra Low Voltage Memory Kit	647869-B21
HP 8GB (1x8GB) Dual Rank x4 PC3U-10600R (DDR3-1333) Registered CAS-9 Ultra Low Voltage Memory Kit	647875-B21
HP 16GB (1x16GB) Dual Rank x4 PC3U-10600R (DDR3-1333) Registered CAS-9 Ultra Low Voltage Memory Kit	647881-B21

HP I/O Modules

NOTE: One I/O module must be selected per server node. The HP ProLiant SL454x 1G FIO Module Kit supports two (2) embedded 1Gb NICs. The HP SL454x 10G FIO Input Output Module Kit supports two (2) embedded 1Gb NICs and two (2) embedded 10Gb NICs with an optional InfiniBand upgrade.

NOTE: IB supported with addition of HP IB Enablement Kit

NOTE: 10 Gb Ethernet on the QSFP port requires the use of the QSFP to SFP+ (QSA) adapter 655874-B21.

HP SL454x 1G FIO Input Output Module Kit	664647-B21
NOTE: IB supported with addition of HP IB Enablement Kit	
HP SL454x 10G FIO Input Output Module Kit	
HP SL454x 10G Input Output Module Kit	664648-B21

NOTE: Quantity of I/O module should be 1 for every 1x60 model, 2 for every 2x25 model and 3 for every 3x15 model.

HP Storage Controllers

NOTE: Each node can support up to two of the p420i Gen8 storage controllers to manage the LFF hard drives.

NOTE: If two p420i Gen8 storage controllers are ordered, the HP SL454x Storage Mezzanine to PCIe Enablement Kit cannot be ordered

HP Smart Array P420i Mezzanine Controller FIO Kit	692276-B21
NOTE: A cache module must be selected. Zero Memory cache option is not supported. The 12 inch Supercap kit must be ordered.	

Optional Upgrades

HP 1GB P-series Smart Array Flash Backed Write Cache	631679-B21
HP 2GB P-series Smart Array Flash Backed Write Cache	631681-B21
HP 12in Super Capacity Option for Smart Array	668943-B21

Step 3: Choose Additional Factory Integratable Options (only one of the following from each list unless otherwise noted)

PCI Riser

HP SL454x Storage Mezzanine to PCIe Enablement Kit	682632-B21
NOTE: Needed to enable Low Profile PCIe Slot in the I/O module. Required for ordering any additional PCI Express cards for adding one of the expansion options such as HP IO accelerator, networking options or external storage controller options	
NOTE: If two p420i Gen8 storage controllers are ordered, the HP SL454x Storage Mezzanine to PCIe Enablement Kit cannot be ordered	

Configuration Information - Factory Integrated Models

Rack Adapter	HP 13U FIO Rack Adapter Kit for 3X4.3U Chassis NOTE: Densely groups three SL4545 chassis into a 13U tall space. Order one per three chassis. The 0.66U spacer is not used when selecting this option.	681677-B21
HP Insight Software	HP Insight Control including 1yr 24x7 Support ProLiant ML/DL/BL-bundle Single Server FIO License	C6N36A
	HP Insight Control for BladeSystem including 1yr 24x7 Support Enclosure 16Svr FIO Electronic License	C6N33ABE
	HP Insight Control for BladeSystem including 1yr 24x7 Support Enclosure 8 Svr FIO Electronic License	C6N32ABE
	HP Insight Control including 1yr 24x7 Support ProLiant ML/DL/BL-bundle FIO Electronic License	C6N36ABE

Step 4: Choose Additional Options for Factory Integration

NOTE: For additional options, please refer to the "Core Options" and "Additional Options" section below.

Core Options

NOTE: Some options may not be integrated at the factory. To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for additional information.

HP Processors

NOTE: Please choose Processor options for the second processor of each server node.

Eight-Core Processors

NOTE: All support up to 1600MHz DDR3 memory speeds.

HP SL4545 Gen8 AMD Opteron™ 4274HE (2.5GHz/8-core/8MB/65W) Processor Kit 681829-B21

HP SL4545 Gen8 AMD Opteron™ 4284 (3.0GHz/8-core/8MB/95W) Processor Kit 681826-B21

Six-Core Processors

NOTE: All support up to 1600MHz DDR3 memory speeds.

HP SL4545 Gen8 AMD Opteron™ 4226 (2.7GHz/6-core/8MB/95W) Processor Kit 681849-B21

HP SL4545 Gen8 AMD Opteron™ 4238 (3.3GHz/6-core/8MB/95W) Processor Kit 681846-B21

NOTE: DDR3 speed is the maximum memory speed of the processor. Actual memory speed may depend on the quantity and type of DIMMs installed.

HP Memory

NOTE: Please choose memory options for the second processor of each server node. Up to 6 DDR3 DIMM slots are dedicated per socket.

NOTE: For additional information, please see the HP Memory QuickSpecs at:

http://h18000.www1.hp.com/products/quickspecs/14225_div/14225_div.html

NOTE: RDIMMs and ULVDIMMs are all distinct memory technologies and cannot be mixed within a server. The majority of AMD based servers support RDIMM and ULVDIMM.

NOTE: Depending on the memory configuration and processor model, the memory speed may run at 1600MHz or 1333MHz. Please see the Online Memory Configuration Tool at: www.hp.com/go/ddr3memory-configurator.

Registered DIMMs (RDIMM)

HP 4GB (1x4GB) Single Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit 647871-B21

HP 8GB (1x8GB) Dual Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit 647877-B21

HP 16GB (1x16GB) Dual Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit 647883-B21

Ultra Low Voltage DIMM (ULVDIMM)

HP 4GB (1x4GB) Single Rank x4 PC3U-10600R (DDR3-1333) Registered CAS-9 Ultra Low Voltage Memory Kit 647869-B21

HP 8GB (1x8GB) Dual Rank x4 PC3U-10600R (DDR3-1333) Registered CAS-9 Ultra Low Voltage Memory Kit 647875-B21

HP 16GB (1x16GB) Dual Rank x4 PC3U-10600R (DDR3-1333) Registered CAS-9 Ultra Low Voltage Memory Kit 647881-B21

HP Hard Drives

NOTE: For the 1x60 model, choose up to a total of 60 LFF 3.5" hard drives from the following options using any mix of SAS/SATA/SSD hard drives for desired performance and up to a total of 2 SFF 2.5" hard drives from the following options for OS, boot or additional storage purposes.

NOTE: For the 2x25 model, choose up to a total of 25 LFF 3.5" hard drives per server node from the following options using any mix of SAS/SATA/SSD hard drives for desired performance and up to a total of 2 SFF 2.5" hard drives per server node from the following options for OS, boot or additional storage purposes.

NOTE: For the 3x15 model, choose up to a total of 15 LFF 3.5" hard drives per server node from the following options using any mix of SAS/SATA/SSD hard drives for

Core Options

desired performance and up to a total of 2 SFF 2.5" hard drives per server node from the following options for OS, boot or additional storage purposes.

NOTE: The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.

NOTE: Hard drives have either a one year or three year warranty.

6G SAS Hot Plug SmartDrive LFF (3.5-inch) Enterprise Drives

HP 450GB 6G SAS 15K rpm LFF (3.5-inch) SC Enterprise 3yr Warranty Hard Drive 652615-B21

HP 600GB 6G SAS 15K rpm LFF (3.5-inch) SC Enterprise 3yr Warranty Hard Drive 652620-B21

6G SAS Hot Plug SmartDrive LFF (3.5-inch) Midline Drives

HP 4TB 6G SAS 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive 695510-B21

HP 3TB 6G SAS 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive 652766-B21

HP 2TB 6G SAS 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive 652757-B21

HP 1TB 6G SAS 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive 652753-B21

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:

http://h18000.www1.hp.com/products/quickspecs/12244_div/12244_div.html
(Worldwide)

6G SATA Hot Plug with SmartDrive SFF (2.5-inch) Midline (MDL) Drives

HP 1TB 6G SATA 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive 655710-B21

HP 500GB 6G SATA 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive 655708-B21

6G SATA Hot Plug with SmartDrive LFF (3.5-inch) Midline (MDL) Drives

HP 4TB 6G SATA 7.2k rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive 693687-B21

HP 3TB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive 628061-B21

HP 2TB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive 658079-B21

HP 1TB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive 657750-B21

HP 500GB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive 658071-B21

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:

http://h18000.www1.hp.com/products/quickspecs/13021_div/13021_div.html
(Worldwide)

6G SATA Value Endurance Hot Plug LFF (3.5-inch) Enterprise Value Solid State Drives

HP 800GB 6G SATA Value Endurance LFF 3.5-in SC Enterprise Value 3yr Wty Solid State Drive 718189-B21

HP 600GB 6G SATA Value Endurance LFF 3.5-in SC Enterprise Value 3yr Wty Solid State Drive 739900-B21

HP 480GB 6G SATA Value Endurance LFF 3.5-in SC Enterprise Value 3yr Wty Solid State Drive 718183-B21

HP 300GB 6G SATA Value Endurance LFF 3.5-in SC Enterprise Value 3yr Wty Solid State Drive 739890-B21

HP 240GB 6G SATA Value Endurance LFF 3.5-in SC Enterprise Value 3yr Wty Solid State Drive 718177-B21

6G SATA ME Hot Plug SFF (2.5-inch) Enterprise Mainstream Solid State Drives

HP 800GB 6G SATA Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive 691868-B21

HP 400GB 6G SATA Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr 691866-B21

Core Options

Wty Solid State Drive	
HP 200GB 6G SATA Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691864-B21
HP 100GB 6G SATA Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691862-B21
6G SATA ME Hot Plug LFF (3.5-inch) Enterprise Mainstream Solid State Drives	
HP 800GB 6G SATA Mainstream Endurance LFF 3.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691860-B21
HP 400GB 6G SATA Mainstream Endurance LFF 3.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691856-B21
HP 200GB 6G SATA Mainstream Endurance LFF 3.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691854-B21
HP 100GB 6G SATA Mainstream Endurance LFF 3.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691852-B21
NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/14038_div/14038_div.html (Worldwide)	

HP Networking

Gigabit Ethernet Adapters

HP NC365T 4-port Ethernet Server Adapter	593722-B21
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10 Gigabit Ethernet adapters

HP Ethernet 10Gb 2-port 530SFP Adapter	652503-B21
HP Ethernet 10Gb 2-port 530T Adapter	656596-B21
HP Ethernet 10Gb 2-port 561T Adapter	716591-B21

NOTE: Need to order HP SL454x Storage Mezzanine to PCIe Enablement Kit to enable the low profile PCIe slot.

NOTE: These are additional expansion options and only one may be selected per server node.

NOTE: Please see the QuickSpecs for Technical Specifications and additional information: www.hp.com/go/ProLiantNICs

HP InfiniBand

HP InfiniBand Enablement Kit	614841-B21
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NOTE: Please see the QuickSpecs for additional information:

http://h18000.www1.hp.com/products/quickspecs/13078_div/13078_div.html

HP Power Supplies

NOTE: Prior to making a power supply selection it is highly recommended that the HP Power Advisor is run to determine the right size power supply for your server configuration. The HP Power Advisor is located at: www.hp.com/go/hppoweradvisor.

HP Common Slot Platinum Plus Power Supply Kits

NOTE: The following Power Supplies offer 94% efficiency with support for Intelligent Power Discovery

HP 750W Common Slot Platinum Plus Hot Plug Power Supply Kit	656363-B21
HP 1200W Common Slot Platinum Plus Hot Plug Power Supply Kit	656364-B21

HP Common Slot Gold Power Supplies

NOTE: The following power supplies offer up to 92% efficiency.

HP 750W Common Slot Gold Hot Plug Power Supply Kit	512327-B21
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NOTE: Kits contain optional power supply, an IEC power cable and PDU IEC cables.

Additional Options

NOTE: Some options may not be integrated at the factory. To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for additional information.

HP SL Advanced Power Manager

The SL Advanced Power Manager is an optional rack level solution for the HP ProLiant SL4540 and SL4545 which enables server-level DC (or hardware) power on and off and server-level monitoring. In addition, the SL APM will automatically discover SL hardware components which are connected into the SL APM solution.

The SL APM does not replace rack PDUs, but is designed to enable the utilization of basic, low cost, rack PDUs while providing the functionality of 'switched' PDUs which provide hardware power on/off of individual servers by turning off the AC power to the power supplies of a given server. Because the SL servers share power supplies to optimize power efficiency, using 'switched' PDUs to turn off the power supplies in the chassis will result in the loss of all servers in that chassis. The SL APM solves this by allowing server-level hardware power on/off of the DC power to the individual server motherboards.

HP SL Advanced Power Manager Kit

538084-B21

HP SL Advanced Power Manager Distribution Module Kit

620002-B21

HP Insight Software

HP Insight Control

HP Insight Control including 1yr 24x7 Technical Support and Updates Electronic License

C6N28ABE

NOTE: The Electronic software license is available in EMEA only.

HP Insight Control including 1yr 24x7 Technical Support and Updates Single Server License

C6N27A

HP Insight Control Server Provisioning Media Kit

BD883A

HP Insight Management Media Kit

C6N31A

NOTE: Electronic and Flexible-Quantity licenses can be used to purchase multiple licenses with a single activation key.

NOTE: Customer will receive a license entitlement certificate. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service.

NOTE: Licenses ship without media. The HP Insight Control Media Kit can be ordered separately, or can be downloaded at: <http://www.hp.com/go/insightupdates>.

NOTE: For additional license options please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12631_div/12631_div.html

HP Integrated Lights-Out (iLO) Advanced for ProLiant

HP iLO Advanced including 1yr 24x7 Technical Support and Updates E-LTU

E6U59ABE

NOTE: The Electronic software license is available in EMEA only.

HP iLO Advanced including 3yr 24x7 Technical Support and Updates E-LTU

E6U64ABE

NOTE: The Electronic software license is available in EMEA only.

HP iLO Advanced including 1yr 24x7 Technical Support and Updates Single Server License

512485-B21

HP iLO Advanced for BladeSystem including 1yr 24x7 Support Eight Server License

512489-B21

HP iLO Advanced 1 Server License with 3yr 24x7 Tech Support and Updates

BD505A

NOTE: For additional license kits, including electronic delivery options, please see the iLO QuickSpecs at:

http://h18004.www1.hp.com/products/quickspecs/14276_div/14276_div.html

NOTE: For more information, visit: <http://www.hp.com/go/ilo>.

Additional Options

High Performance Clusters

HP Cluster Management Utility

HP Insight Cluster Management Utility 1yr 24x7 Flexible License

QL803B

HP Insight Cluster Management Utility 3yr 24x7 Flexible License

BD476A

NOTE: These part numbers can be used to purchase one certificate for multiple licenses and support with a single activation key. Each license is for one node (server). Customer will receive a printed end user license agreement and license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online in order to obtain a license key. Customer also will receive a support agreement.

HP Insight Cluster Management Utility Media

BD477A

NOTE: For additional license kits please see the QuickSpecs at:

http://h18004.www1.hp.com/products/quickspecs/12612_div/12612_div.html

HP I/O Accelerator Options

Second Generation Accelerators

HP 365GB Multi Level Cell G2 PCIe ioDrive2 for ProLiant Servers

673642-B21

HP 785GB Multi Level Cell G2 PCIe ioDrive2 for ProLiant Servers

673644-B21

NOTE: Need to order HP SL454x Storage Mezzanine to PCIe Enablement Kit to enable the low profile PCIe slot.

NOTE: These are additional expansion options and only one may be selected per server node.

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:

http://h18000.www1.hp.com/products/quickspecs/13587_div/13587_div.html (Worldwide)

HP PCIe Workload Accelerator Options

Mainstream Endurance (ME) PCIe Workload Accelerators

HP 1.4TB HH/HL Mainstream Endurance (ME) PCIe Workload Accelerator

729307-B21

HP 700GB HH/HL Mainstream Endurance (ME) PCIe Workload Accelerator

729305-B21

High Endurance (HE) PCIe Workload Accelerators

HP 700GB HH/HL High Endurance (HE) PCIe Workload Accelerator

708090-B21

HP 350GB HH/HL High Endurance (HE) PCIe Workload Accelerator

708088-B21

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:

http://h18000.www1.hp.com/products/quickspecs/14528_div/14528_div.html (Worldwide)

HP Security

HP Trusted Platform Module Option

488069-B21

NOTE: The TPM (Trusted Platform Module) is a microcontroller chip that can securely store artifacts used to authenticate the server platform. These artifacts can include passwords, certificates and encryption keys. Windows® BitLocker™ Drive Encryption (BitLocker) is a data protection feature available in Windows Server® 2008. BitLocker leverages the enhanced security capabilities of a Trusted Platform Module (TPM) version 1.2. The TPM works with BitLocker to help protect user data and to ensure that a server running Windows Server 2008 has not been tampered with while the system was offline. For more information about TPM, including a white paper, go to: www.hp.com/go/TPM.

NOTE: ProLiant OS pre-installed units will come with the partition required for TPM deployment.

NOTE: The TPM key is unique to every TPM deployed server and must be retained. Misplacing or losing the key could result in data loss.

Additional Options

HP Storage Controllers

SAS Controllers

Smart Array P421 Controller

HP Smart Array P421/1GB FBWC 6Gb 2-ports Ext SAS Controller 631673-B21

HP Smart Array P421/2GB FBWC 6Gb 2-ports Ext SAS Controller 631674-B21

Optional Upgrades

HP 12in Super Capacity Option for Smart Array 668943-B21

HP 1GB P-series Smart Array Flash Backed Write Cache 631679-B21

HP 2GB P-series Smart Array Flash Backed Write Cache 631681-B21

NOTE: Due to cabling requirements, the HP 12in Super Cap is a required option to implement a HP Smart Array Controller with Flash.

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:

http://h18000.www1.hp.com/products/quickspecs/14229_div/14229_div.html
(Smart Array P421 Controller)

Host Bus Adapter

HP H221 Host Bus Adapter 650931-B21

NOTE: Need to order HP SL454x Storage Mezzanine to PCIe Enablement Kit to enable the low profile PCIe slot.

NOTE: These are additional expansion options and only one may be selected per server node.

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:

http://h18004.www1.hp.com/products/quickspecs/14337_div/14337_div.html
(HBA 222)

HP Power Cords

NOTE: HP ProLiant servers ships with an IEC-IEC power cord used for rack mounting with Power Distribution Units (PDUs).

HP C13 - C14 WW 250V 10A Gray 0.7m Jumper Cord A0K03A

HP C13 - C14 WW 250V 10A Gray 1.37m Jumper Cord A0K04A

HP C13 - SEV 1011 CH 250V 10Amp 1.83m Power Cord AF565A

HP C13 - DK-2.5A DK 250V 10Amp 1.83m Power Cord AF566A

HP C13 - CEE-VII EU 250V 10Amp 1.83m Power Cord AF568A

HP C13 - SI-32 IL 250V 10Amp 1.83m Power Cord AF564A

HP C13 - NBR-14136 BR 250V 10Amp 1.83m Power Cord AF591A

HP C13 - BS-1363A UK/HK/SG 250V 10Amp 1.83m Power Cord AF570A

HP C13 - CEI-23-50 IT/CL 250V 10Amp 1.83m Power Cord AF571A

HP C13 - C14 WW 250V 10Amp 2.0m Jumper Cord A0K02A

HP C13 - IS-1293 IN 250V 10Amp HV 2.5m Power Cord SG579A

HP C13 - AS3112-3 AU 250V 10Amp 2.5m Power Cord AF569A

HP C13 - SABS-164 ZA 250V 10Amp 2.5m Power Cord AF567A

HP C13 - JIS C8303 JP 100V 12Amp 2.0m Power Cord AF572A

HP C13 - C14 WW 250V 10A Gray 3.0m Jumper Cord A0K06A

HP C13 - Nema 6-15P US 250V 15A JP 3.6m Power Cord A0N33A

HP C13 - GB-1002 CN 250V 10Amp 1.83m Power Cord AF557A

HP C13 - KSC- 8305 KR 250V 10Amp 1.83m Power Cord AF560A

HP C13 - CNS-690 TW 110V 13Amp 1.83m Power Cord AF561A

HP C13 - Nema 5-15P TH/PH 250V 10Amp 1.83m Power Cord AF559A

Additional Options

HP C13 - Nema 5-15P US/CA 110V 10Amp 1.83m Power Cord	AF556A
HP C13 - IS-1293 IN 240V 6Amp LV 2.0m Power Cord	AF562A
HP C13 - IRAM -2073 AR 250V 10A 2.5m Power Cord	AF558A
HP C13 - C14 WW 250V 10Amp Flint Gray 2.0m Jumper Cord	AF573A

HP Tape Backup

NOTE: For the complete range of tape drives, autoloaders, libraries and media see: <http://www.hp.com/go/tape>. For hardware and software compatibility of HP tape backup products see: <http://www.hp.com/storage/SPOCK>

HP StoreEver LTO-6 Ultrium 6250 Tape Drive in 1U Rack-mount Kit	COL99A
HP StoreEver 1/8 G2 LTO-6 Ultrium 6250 SAS Tape Autoloader	COH18A

HP Tape Storage Systems

HP StoreEver MSL6480

HP StoreEver MSL6480 Scalable Base Module	QU625A
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NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/14604_div/14604_div.html
 (Worldwide)

HP Disk Storage Systems Disk Enclosures

HP D2600 w/12 4TB 6G SAS 7.2K LFF Dual Port MDL HDD 48TB Bundle	E7W32A
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NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/13404_div/13404_div.html
 (Worldwide)

HP Uninterruptible Power Systems

HP Rack-mountable UPS

HP R1500 G3 Uninterruptible Power Supply (UPS)

HP R1.5kVA G3 1U NA Uninterruptible Power System	AF469A
HP R1.5kVA G3 1U JP/TW Uninterruptible Power System	AF470A
HP R1.5kVA G3 1U INTL Uninterruptible Power System	AF471A

NOTE: Please see the QuickSpecs for additional information:
http://h18000.www1.hp.com/products/quickspecs/14059_div/14059_div.html
 (Worldwide)

HP R/T3000 G2 Uninterruptible Power System (UPS)

HP R/T3000 G2 2U L530 Low Voltage NA/JP Uninterruptible Power System	AF466A
HP R/T3000 G2 2U L620 High Voltage NA/JP Uninterruptible Power System	AF467A
HP R/T3000 G2 2U Detachable Cord High Voltage INTL Uninterruptible Power System	AF468A

NOTE: Please see the QuickSpecs for additional information:
http://h18000.www1.hp.com/products/quickspecs/14058_div/14058_div.html
 (Worldwide)

R5000 Uninterruptible Power System (UPS)

HP R5KVA 3U IEC309-32A High Voltage INTL Uninterruptible Power System	AF461A
HP R5KVA 3U L630 High Voltage NA/JP Uninterruptible Power System	AF460A

NOTE: Please see the QuickSpecs for additional information:
http://h18000.www1.hp.com/products/quickspecs/14109_div/14109_div.html
 (Worldwide)

R7000 Uninterruptible Power System (UPS)

HP R7KVA 4U 50A High Voltage NA/JP Uninterruptible Power System	AF462A
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Additional Options

HP R7KVA 4U IEC-32A High Voltage INTL Uninterruptible Power System

AF463A

NOTE: Please see the QuickSpecs for additional information:

http://h18000.www1.hp.com/products/quickspecs/14110_div/14110_div.html
(Worldwide)

NOTE: For additional information on HP Uninterruptible Power Systems please go to:

www.hp.com/servers/rackups.

NOTE: For additional information on sizing your server, please reference:

<http://www.upssizer.com>.

NOTE: Please see the UPS and PDU cable matrix's on the HP Power Protection and Management page. Under Power Cords, click on the "HP Power Cord Matrix" link. That link will list cable descriptions, requirements, and specifications for UPS and PDU units. Please see the following link: www.hp.com/products/powercords.

HP Basic Power

Distribution Units (bPDU)

HP Basic Power Distribution Unit: 1U/OU Version

HP 1.9kVA 120 Volt L5-20 Input (12xNEMA 5-20R) NA/JP Basic PDU

H5M54A

HP 3.6kVA 200-240 Volt Detachable C20 Input (12xC13) WW Basic PDU

H5M56A

HP Basic Power Distribution Unit: Half Height Version

HP 2.8kVA 120 Volt L5-30 Input (18xNEMA 5-20R) NA/JP Basic PDU

H5M55A

HP 3.6kVA 200-240 Volt Detachable C20 Input (18xC13) WW Basic PDU

H5M57A

HP 4.9kVA 208 Volt L6-30 Input (20xC13) NA/JP Basic PDU

H5M58A

HP 7.3kVA 230 Volt IEC309 32A Input (20xC13) INTL Basic PDU

H5M68A

HP 8.6kVA 208 Volt L15-30 3-Phase Input (18xC13) NA/JP Basic PDU

H5M61A

HP Basic Power Distribution Unit: Mid Height Version

HP 4.9kVA 208 Volt L6-30 Input (24xC13/6xC19) NA/JP Basic PDU

H5M59A

HP 7.3kVA 230 Volt IEC309 32A Input (24xC13/6xC19) INTL Basic PDU

H5M70A

HP 8.3kVA 208 Volt CS8265C Input (30xC13/6xC19) NA/JP Basic PDU

H5M60A

HP 11kVA 230 Volt IEC309 63A Input (30xC13/6xC19) INTL Basic PDU

H5M71A

HP Hardwired 200-240 Volt Input (30xC13/6xC19) WW Basic PDU

H5M75A

HP 5.7kVA 208 Volt L21-20 3-Phase Input (24xC13/3xNEMA 5-20R) NA/JP Basic PDU

H5M63A

HP 8.6kVA 208 Volt L21-30 3-Phase Input (24xC13/3xC19/3xNEMA 5-20R) NA/JP Basic PDU

H5M64A

HP 8.6kVA 208 Volt L15-30 3-Phase Input (24xC13/6xC19) NA/JP Basic PDU

H5M62A

HP 11kVA 400 Volt IEC309 16A 3-Phase Input (30xC13/6xC19) INTL Basic PDU

H5M72A

HP Basic Power Distribution Unit: Full Height Version

HP 11kVA 400 Volt IEC309 16A 3-Phase Input (36xC13/6xC19) INTL Basic PDU

H5M73A

HP 11kVA 400 Volt IEC309 30A 3-Phase Input (36xC13/6xC19) NA Basic PDU

H5M67A

HP Basic Power Distribution Unit: 480/277 Volt Version

HP 13.2kVA 480 Volt IEC309 30A 3-Phase Input (15 Outlet) NA Basic PDU

H3X07A

HP 19.9kVA 480 Volt IEC309 30A 3-Phase Input (30 Outlet) NA Basic PDU

H3X08A

HP 800VA - 277V Input / 230V Output NA Rack Mount Transformer

H3X09A

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:

http://h18000.www1.hp.com/products/quickspecs/14557_div/14557_div.html
(Worldwide)

NOTE: Additional HP Power Distribution Units are available. For a complete list of all HP PDUs and additional information please visit: www.hp.com/go/rackandpower

HP Remote Monitoring

HP Remote Monitored Power Distribution Unit: 1U Version



Additional Options

Power Distribution Units (mPDU)	HP 2.8kVA 120 Volt L5-30 Input (12xNEMA 5-20R)NA/JP Monitored PDU	D9N43A
	HP 3.6kVA 200-240 Volt Detachable C20 Input (12xC13) WW Monitored PDU	D9N46A
	HP 4.9kVA 208 Volt L6-30 Input (12xC13) NA/JP Monitored PDU	D9N44A
	HP Remote Monitored Power Distribution Unit: Half Height Version	
	HP 3.6kVA 200-240 Volt Detachable C20 Input (16xC13) WW Monitored PDU	D9N45A
	HP Remote Monitored Power Distribution Unit: Mid Height Version	
	HP 4.9kVA 208 Volt L6-30 Input (20xC13/4xC19) NA/JP Monitored PDU	D9N47A
	HP 7.3kVA 230 Volt IEC309 32A Input (20xC13/4xC19) INTL Monitored PDU	D9N48A
	HP 8.6kVA 208 Volt L15-30 3-Phase Input (18xC13/3xC19) NA/JP Monitored PDU	D9N51A
	HP 5.7kVA 208 Volt L21-20 3-Phase Input (18xC13/3xNEMA 5-20R) NA/JP Monitored PDU	D9N52A
	HP 8.6kVA 208 Volt L21-30 3-Phase Input (20xC13/3xC19/3xNEMA 5-20R) NA/JP Monitored PDU	D9N53A
	HP 11kVA 400 Volt IEC309 16A 3-Phase Input (18xC13/3xC19) INTL Monitored PDU	D9N55A
	HP Remote Monitored Power Distribution Unit: Full Height Version	
	HP 8.3kVA 208 Volt CS8265C Input (30xC13/3xC19) NA Monitored PDU	D9N49A
	HP 7.3kVA 230 Volt IEC309 32A Input (32xC13/4xC19) INTL Monitored PDU	D9N50A
	HP 11kVA 400 Volt IEC309 16A 3-Phase Input (30xC13/3xC19) INTL Monitored PDU	D9N57A
	HP 14.4kVA 208 Volt CS8365C 3-Phase Input (12xC13/12xC19)NA Monitored PDU	D9N58A
	HP 16.6kVA 400 Volt IEC309 30A 3-Phase Input (30xC13/3xC19) NA Monitored PDU	D9N61A
	HP 17.3kVA 208 Volt IEC309 60A 3-Phase Input (24xC13/3xC19) NA/JP Monitored PDU	D9N54A
	HP 17.3kVA 208 Volt IEC309 60A 3-Phase Input (12xC13/12xC19) NA/JP Monitored PDU	D9N59A
	HP 22kVA 400 Volt IEC309 32A 3-Phase Input (12xC13/12xC19) INTL Monitored PDU	D9N60A
	HP 22kVA 400 Volt IEC309 32A 3-Phase Input (30xC13/3xC19) INTL Monitored PDU	D9N56A
	HP 16.6kVA 400 Volt IEC309 30A 3-Phase Input (12xC13/12xC19) NA Monitored PDU	D9N62A
	HP 19.9kVA 480 Volt 3-Phase (30 Outlet) NA Monitored PDU	D9N63A
	HP Environmental Sensor for Remote Monitored PDUs	
	HP Environmental Sensor for Remote Monitored PDUs	E2D53A
	NOTE: Please see the QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/14669_div/14669_div.html (Worldwide)	

HP Intelligent Power Distribution Units (iPDU)	iPDU Core Units	
	HP 4.9kVA 24A Single Phase NA/JP Core Intelligent Modular Power Distribution Unit	AF520A
	HP 8.3kVA 40A Single Phase NA/JP Core Intelligent Modular Power Distribution Unit	AF521A
	HP 8.6kVA 24A Three Phase NA/JP Core Intelligent Modular Power Distribution Unit	AF522A
	HP 14.4kVA 40A Three Phase NA/JP Intelligent Modular Power Distribution Unit	AF533A
	HP 17.3kVA 48A Three Phase NA/JP Core Intelligent Modular Power Distribution Unit	AF523A
	HP 17.3kVA 24A 415V Three Phase L22-30 NA Core Intelligent Power Distribution Unit	AF902A
	HP 7.3kVA 32A Single Phase INTL Core Intelligent Modular Power Distribution Unit	AF525A
	HP 11kVA 16A Three Phase INTL Core Intelligent Modular Power Distribution Unit	AF526A
	HP 22kVA 32A Three Phase INTL Core Intelligent Modular Power Distribution Unit	AF527A
	HP 17.3kVA 48A 208V Three Phase 12 Outlet Core NA/JP Intelligent Power	AF535A

Additional Options

Distribution Unit	
HP 17.3kVA 24A 415V Three Phase 12 Outlet Core NA/JP Intelligent Power Distribution Unit	AF537A
HP 22kVA 32A 400V Three Phase 12 Outlet Core INTL Intelligent Power Distribution Unit	AF538A
iPDU Kits with Standard Extension Bars	
HP 4.9kVA 24A Single Phase NA/JP Intelligent Modular Power Distribution Kit	AF531A
HP 8.6kVA 24A Three Phase NA/JP Intelligent Modular Power Distribution Kit	AF532A
HP 7.3kVA 32A Single Phase INTL Intelligent Modular Power Distribution Kit	AF534A
iPDU Extension Bars	
HP 5xC13 Intelligent PDU Extension Bar G2 Kit	AF547A
HP 5xC13 Outlets Power and UID LEDs Pair Standard Extension Bar	AF528A
NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/13650_div/13650_div.html (Worldwide)	
NOTE: Additional HP Power Distribution Units are available. For a complete list of all HP PDUs and additional information please visit: www.hp.com/go/rackandpower .	

HP Rack Series

HP Intelligent Rack Series

HP 636 1200mm Pallet Intelligent Series Rack	BW899A
HP 636 1200mm Shock Intelligent Series Rack	BW900A
HP 642 1200mm Pallet Intelligent Series Rack	BW907A
HP 642 1200mm Shock Intelligent Series Rack	BW908A
HP 647 1200mm Pallet Intelligent Series Rack	BW913A
HP 647 1200mm Shock Intelligent Series Rack	BW914A

NOTE: Rack chosen is required to have 1200mm to provide space for cable management arm at the rear of the chassis and host PDU in the rear of the rack.

NOTE: Please see the QuickSpecs for Technical Specifications such as height, width, depth, weight, and color:
http://h18000.www1.hp.com/products/quickspecs/14223_div/14223_div.html
(Worldwide)

NOTE: For additional information regarding Rack Cabinets, please see the following URL: <http://www.hp.com/go/rackandpower>.

HP Rack Options

HP TFT7600 G2 KVM Console and Monitor (TFT7600 G2)

HP TFT7600 G2 KVM Console Rackmount Keyboard US Monitor	AZ870A
HP TFT7600 G2 KVM Console Rackmount Keyboard UK Monitor	AZ871A
HP TFT7600 G2 KVM Console Rackmount Keyboard DE Monitor	AZ872A
HP TFT7600 G2 KVM Console Rackmount Keyboard FR Monitor	AZ873A
HP TFT7600 G2 KVM Console Rackmount Keyboard IT Monitor	AZ874A
HP TFT7600 G2 KVM Console Rackmount Keyboard ES Monitor	AZ875A
HP TFT7600 G2 KVM Console Rackmount Keyboard DK Monitor	AZ876A
HP TFT7600 G2 KVM Console Rackmount Keyboard NO Monitor	AZ877A
HP TFT7600 G2 KVM Console Rackmount Keyboard SE/FI Monitor	AZ878A
HP TFT7600 G2 KVM Console Rackmount Keyboard CH Monitor	AZ879A
HP TFT7600 G2 KVM Console Rackmount Keyboard PT Monitor	AZ880A
HP TFT7600 G2 KVM Console Rackmount Keyboard BE Monitor	AZ881A

Additional Options

HP TFT7600 G2 KVM Console Rackmount Keyboard JP Monitor	AZ882A
HP TFT7600 G2 KVM Console Rackmount Keyboard RU Monitor	AZ883A
HP TFT7600 G2 KVM Console Rackmount Keyboard Intl Monitor	AZ884A
HP TFT7600 G2 KVM Console Rackmount Keyboard US TAA Monitor	AZ885A

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:

http://h18000.www1.hp.com/products/quickspecs/13731_div/13731_div.html
(Worldwide)

HP Server Console Switches

HP Server Console 0x2x8 Port Analog Switch	AF616A
HP Server Console 0x2x16 Port Analog Switch	AF617A
HP TAA 0x2x16xKVM Server Console G2 Switch	AF626A

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:

http://h18000.www1.hp.com/products/quickspecs/11834_div/11834_div.html
(Worldwide)

HP Server Console Switch G2 with Virtual Media & CAC

HP 0x2x16 KVM Server Console Switch G2 with Virtual Media CAC Software	AF618A
HP 0x2x32 KVM Server Console Switch G2 with Virtual Media CAC Software	AF619A
HP KVM CAT5 1-pack USB Interface Adapter	336047-B21

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:

http://h18000.www1.hp.com/products/quickspecs/13475_div/13475_div.html
(Worldwide)

HP IP Console Switch G2 with Virtual Media & CAC

HP 1x4 USB/PS2 KVM Console Switch	AF611A
HP 1x1Ex8 KVM IP Console Switch G2 with Virtual Media CAC Software	AF620A
HP 2x1Ex16 KVM IP Console Switch G2 with Virtual Media CAC Software	AF621A
HP 4x1Ex32 KVM IP Console Switch G2 with Virtual Media CAC Software	AF622A

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:

http://h18000.www1.hp.com/products/quickspecs/13474_div/13474_div.html
(Worldwide)

HP Care Pack Services

HP 3 year Next business day SL454x 1 Node Chassis Hardware Support	U7J55E
HP 3 year Next business day Defective Media Retention SL454x 1 Node Chassis Hardware Support	U7J56E
HP 3 year Next business day SL454x 1 Node Chassis Proactive Service	U7J57E
HP 3 year Next business day Defective Media Retention SL454x 1 Node Chassis Proactive Service	U7J58E
HP 3 year 4 hour 13x5 SL454x 1 Node Chassis Hardware Support	U7J59E
HP 3 year 4 hour 13x5 with Defective Media Retention SL454x 1 Node Chassis Hardware Support	U7J60E
HP 3 year 4 hour 24x7 SL454x 1 Node Chassis Hardware Support	U7J63E
HP 3 year 4 hour 24x7 Defective Media Retention SL454x 1 Node Chassis Hardware Support	U7J64E
HP 3 year 4 hour 24x7 SL454x 1 Node Chassis Proactive Service	U7J65E
HP 3 year 4 hour 24x7 Defective Media Retention SL454x 1 Node Chassis Proactive	U7J66E

Additional Options

Service

HP 3 year 24 hour 24x7 Call to Repair SL454x 1 Node Chassis Hardware Support	U7J69E
HP 3 year 24 hour 24x7 Defective Media Retention SL454x 1 Node Chassis Hardware Support	U7J70E
HP 3 year 6 hour 24x7 Call to Repair SL454x 1 Node Chassis Hardware Support	U7J71E
HP 3 year 6 hour 24x7 Defective Media Retention SL454x 1 Node Chassis Hardware Support	U7J72E
HP 3 year 6 hour 24x7 SL454x 1 Node Chassis Call to Repair Proactive Service	U7J73E
HP 3 year 6 hour 24x7 Defective Media Retention SL454x 1 Node Chassis Call to Repair Proactive Service	U7J74E
HP 3 year Next business day SL454X Gen8 Tray 1x Node Hardware Support	U7K40E
HP 3 year Next business day Defective Media Retention SL454X Gen8 Tray 1x Node Hardware Support	U7K41E
HP 3 year Next business day SL454X Gen8 Tray 1x Node Proactive Service	U7K42E
HP 3 year Next business day Defective Media Retention SL454X Gen8 Tray 1x Node Proactive Service	U7K43E
HP 3 year 4 hour 13x5 SL454X Gen8 Tray 1x Node Hardware Support	U7K44E
HP 3 year 4 hour 13x5 with Defective Media Retention SL454X Gen8 Tray 1x Node Hardware Support	U7K45E
HP 3 year 4 hour 24x7 SL454X Gen8 Tray 1x Node Hardware Support	U7K48E
HP 3 year 4 hour 24x7 Defective Media Retention SL454X Gen8 Tray 1x Node Hardware Support	U7K49E
HP 3 year 4 hour 24x7 SL454X Gen8 Tray 1x Node Proactive Service	U7K50E
HP 3 year 4 hour 24x7 Defective Media Retention SL454X Gen8 Tray 1x Node Proactive Service	U7K51E
HP 3 year 24 hour 24x7 Call to Repair SL454X Gen8 Tray 1x Node Hardware Support	U7K54E
HP 3 year 24 hour 24x7 Defective Media Retention SL454X Gen8 Tray 1x Node Hardware Support	U7K55E
HP 3 year 6 hour 24x7 Call to Repair SL454X Gen8 Tray 1x Node Hardware Support	U7K56E
HP 3 year 6 hour 24x7 Defective Media Retention SL454X Gen8 Tray 1x Node Hardware Support	U7K57E
HP 3 year 6 hour 24x7 SL454X Gen8 Tray 1x Node Call to Repair Proactive Service	U7K58E
HP 3 year 6 hour 24x7 Defective Media Retention SL454X Gen8 Tray 1x Call to Repair Proactive Service	U7K59E

NOTE: For more information, customer/resellers can contact:

<http://www.hp.com/services/carepack>.

Memory

HP ProLiant SL4545 G7 server

NOTE: Memory configurations listed do not apply to "Factory Integrated Models".

NOTE: Chart does not represent all possible memory configurations.

Memory population guidelines

Some DIMM installation guidelines are summarized below:

- For this server with twelve (12) memory slots:
 - There are two (2) channels per processor; four (4) channels per server
 - There are three (3) DIMM slots for each memory channel; twelve (12) total slots
 - Memory channel 2 consists of the three (3) DIMMs that are closest to the processor
 - Memory channel 1 consists of the three (3) DIMMs that are furthest from the processor
- DIMM slots that are white should be populated first
- DIMM slots are numbered sequentially (1 through 6) for each processor. The supported AMP modes use the alpha assignments for population order, and the slot numbers designate the DIMM slot ID for spare replacement.
- Do not mix Ultra Low Voltage DIMMs memory (ULVDIMMs) with Registered memory (RDIMMs)
- If only one processor is installed in a 2CPU system, only half of the DIMM slots are available
- To maximize performance, balance the total memory capacity between all installed processors
- It is not required, but it is recommended to load the channels similarly if possible

DIMM slot/capacity/populated speed table

DIMM Type	Registered DIMMS (RDIMMs)				
DIMM Rank	Single Rank (1R)	Dual Rank (2R)			Quad Rank (4R)
DIMM Capacity	4GB	2GB	8GB	16GB	16GB
DIMM Native Speed (MHz)	1333	1333	1333	1333	1066
Voltage	LV/Std	Std	LV/Std	LV/Std	Std
SLOTS THAT CAN BE POPULATED					
12 slot servers	12	12	12	12	4
MAXIMUM CAPACITY (GB)					
12 slot servers	48	24	96	192	64
POPULATED DIMM SPEED (MHz)					
1 DIMM Per Channel	1333	1333	1333	1333	1066
2 DIMM Per Channel	1333	1333	1333	1333	n/a
3 DIMM Per Channel	1333	1066	1066	800/1066*	n/a

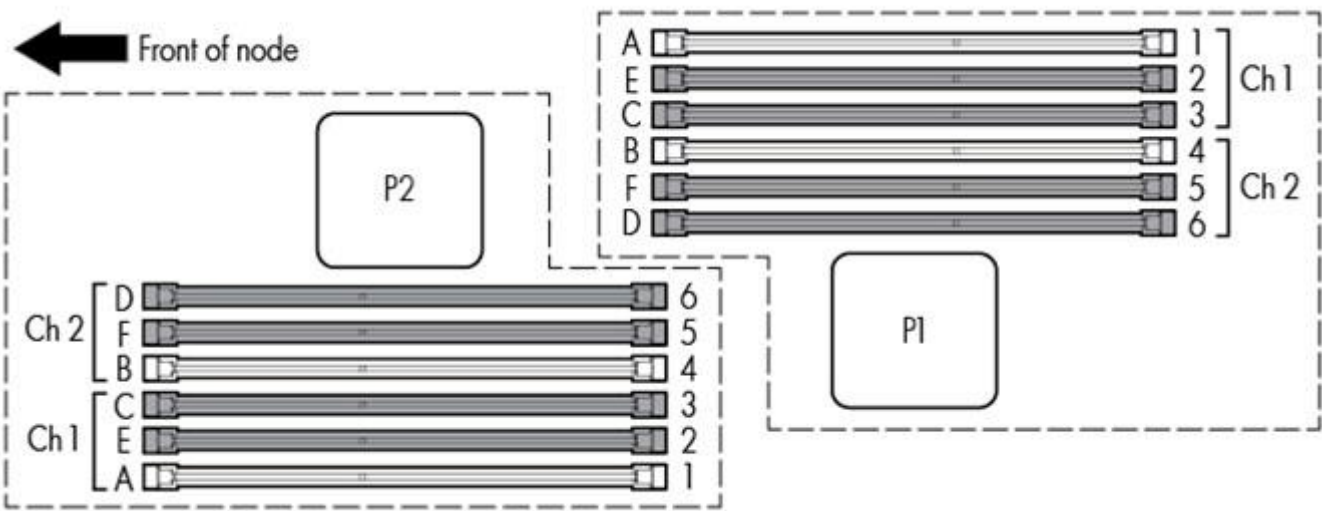
NOTES:

- PC3-10600 DIMMs have a maximum speed of 1333MHz. PC3-8500 DIMMs have a maximum speed of 1066MHz
- Mixing DIMM speeds is allowed, but the system processor speed rules always override the DIMM capabilities
- If you do mix DIMM speeds, the memory bus will default to the minimum clock rate of all DIMMs in the system - even if the slower DIMM is on the other processor
- If you install 1x 1066MHz DIMM in channel 1 and 1x 1333MHz DIMM in channel 2, the maximum speed will be 1066MHz. If you install 1x 1066MHz DIMM in channel 1 and 5x 1333MHz DIMMs with 1 DIMM Per Channel (DPC) in each of the other channels, the maximum speed will be 1066MHz
- Maximum memory speed will also depend on the processor installed

Memory

- References to the above MHz speeds are for the various speeds of DDR3 DIMMs; 1333 refers to DDR3-1333, etc.

DIMM slot and configuration diagrams



Basic memory slot & population diagram

- Population order; start with "A" first, "B" second, "C" third, etc.

12 DIMM SLOTS (6 per CPU)					
CPU1			CPU2		
	slot #	population order	slot #	population order	
Chnl 1	1	A	1	A	Chnl 1
	2	E	2	E	
	3	C	3	C	
Chnl 2	4	B	4	B	Chnl 2
	5	F	5	F	
	6	D	6	D	

NOTE: slots 1 and 4 are furthest from the CPU, slots 3 and 6 are closest.

RDIMM maximum configuration (2 CPU model)

- 192GB, consisting of twelve (12) 16GB Dual-Ranked PC3L-10600 RDIMMs

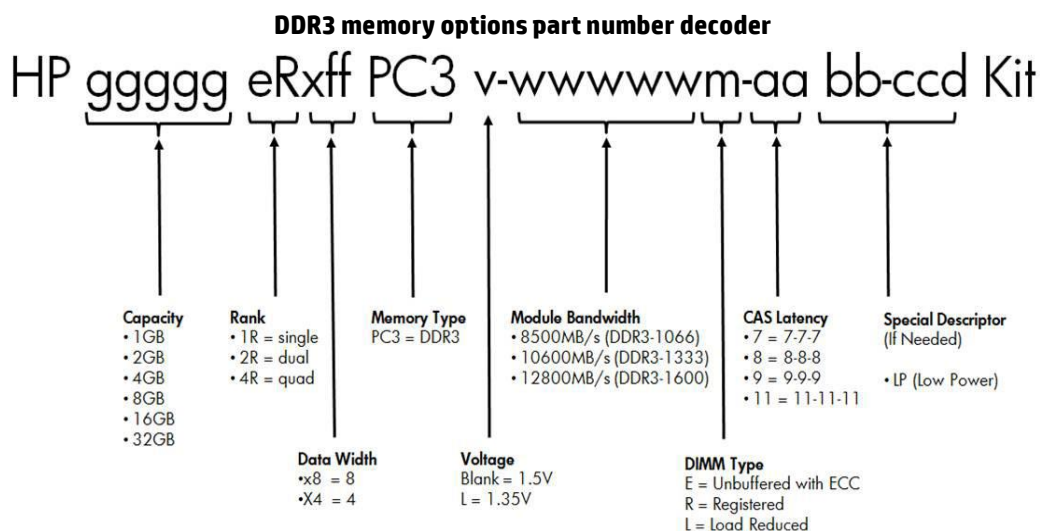
CPU1			CPU2		
	slot #	population order	slot #	population order	
Chnl 1	1	A; 16GB DIMM	1	A; 16GB DIMM	Chnl 1
	2	E; 16GB DIMM	2	E; 16GB DIMM	
	3	C; 16GB DIMM	3	C; 16GB DIMM	

Memory

Chnl 2	4	B; 16GB DIMM	4	B; 16GB DIMM	Chnl 2
	5	F; 16GB DIMM	5	F; 16GB DIMM	
	6	D; 16GB DIMM	6	D; 16GB DIMM	

NOTE: Capacity references are rounded to the common Gigabyte values.

- 1GB = 1024MB
- 2GB = 2048MB
- 4GB = 4096MB
- 8GB = 8192MB
- 16GB = 16384MB



Following are memory options available from HP:

HP Memory

NOTE: Please choose memory options for socket 2 of each server node. Up to 6DDR3 DIMM slots dedicated per socket.

NOTE: For additional information, please see the HP Memory QuickSpecs at:

http://h18000.www1.hp.com/products/quickspecs/14225_div/14225_div.html

NOTE: RDIMMs and ULVDIMMs are all distinct memory technologies and cannot be mixed within a server. The majority of AMD based servers support RDIMM and ULVDIMM.

NOTE: Depending on the memory configuration and processor model, the memory speed may run at 1600MHz or 1333MHz. Please see the Online Memory Configuration Tool at: www.hp.com/go/ddr3memory-configurator.

Registered DIMMs (RDIMM)

HP 4GB (1x4GB) Single Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit 647871-B21

HP 8GB (1x8GB) Dual Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit 647877-B21

HP 16GB (1x16GB) Dual Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit 647883-B21

Ultra Low Voltage DIMM (ULVDIMM)

HP 4GB (1x4GB) Single Rank x4 PC3U-10600R (DDR3-1333) Registered CAS-9 Ultra Low Voltage Memory Kit 647869-B21

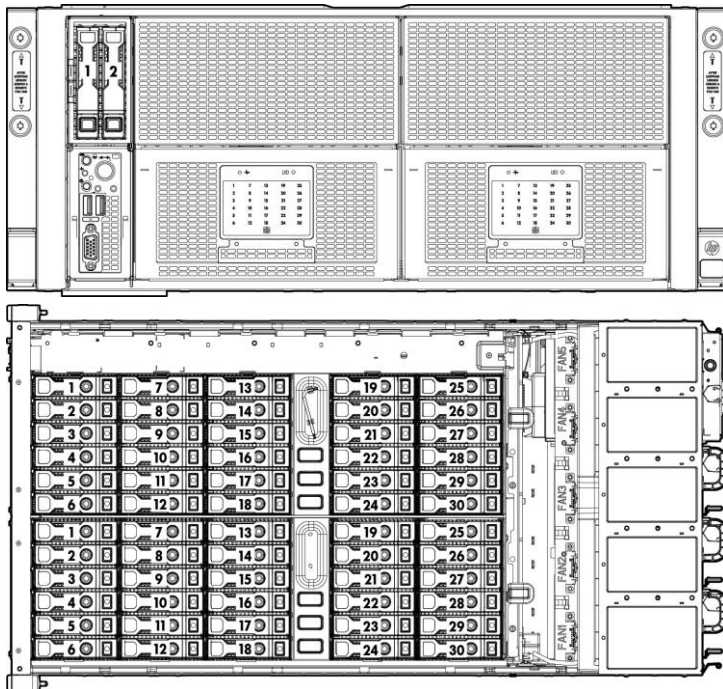
HP 8GB (1x8GB) Dual Rank x4 PC3U-10600R (DDR3-1333) Registered CAS-9 Ultra 647875-B21

Memory

Low Voltage Memory Kit	
HP 16GB (1x16GB) Dual Rank x4 PC3U-10600R (DDR3-1333) Registered CAS-9 Ultra	647881-B21
Low Voltage Memory Kit	

Storage

1x60 Model

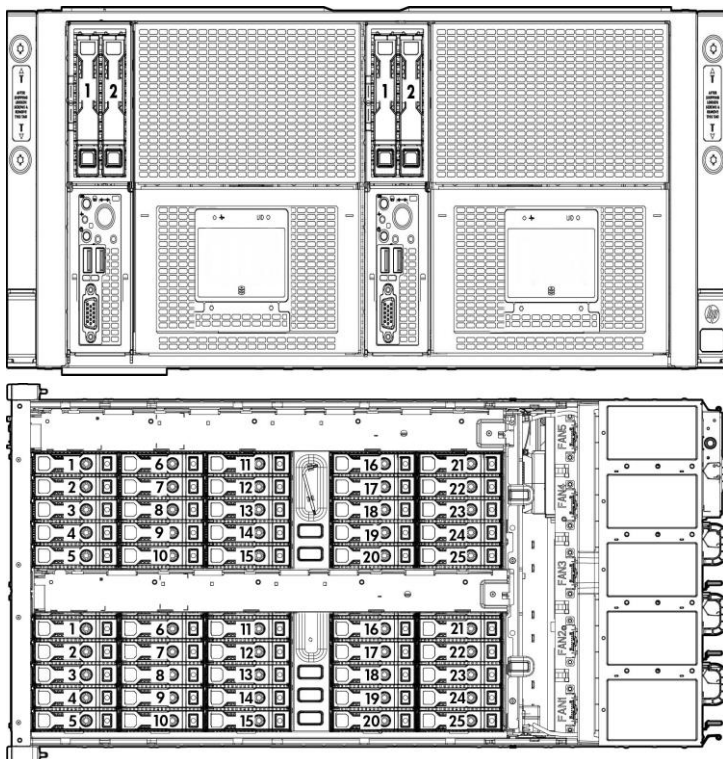


1-2 2 x SFF SATA/SATA SDD Hot Plug Hard Drive Bays

1-30 30 x LFF SATA/SAS/SDD Hot Plug Hard Drive Bays
Controller Port 1i

1-30 30 x LFF SATA/SAS/SDD Hot Plug Hard Drive Bays
Controller Port 2i

2x25 Model



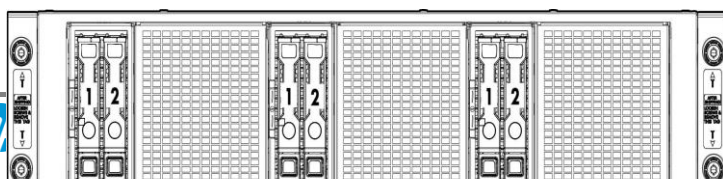
1-2 2 x SFF SATA/SATA SDD Hot Plug SFF Hard Drive
Bays for server node 1

1-2 2 x SFF SATA/SATA SDD Hot Plug SFF Hard Drive
Bays for server node 2

1-25 25 x LFF SATA/SAS/SDD Hot Plug Hard Drive Bays
for server node 1

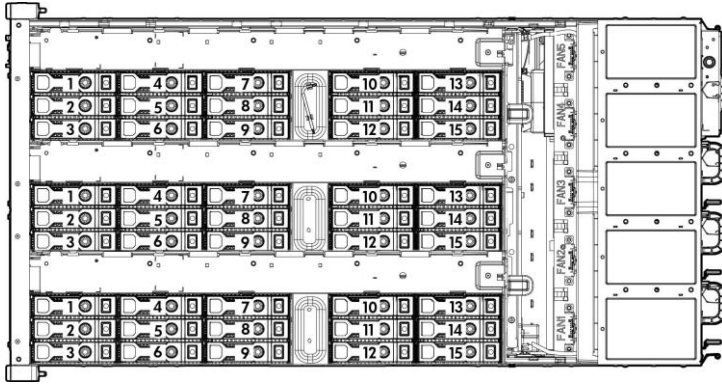
1-25 25 x LFF SATA/SAS/SDD Hot Plug Hard Drive Bays
for server node 2

3x15 Model



1-2 2 x SFF SATA/SATA SDD Hot Plug SFF Hard Drive
Bays for server node 1

Storage



- 1-2 2 x SFF SATA/SATA SDD Hot Plug SFF Hard Drive Bays for server node 2
- 1-2 2 x SFF SATA/SATA SDD Hot Plug SFF Hard Drive Bays for server node 3
- 1-15 15 x LFF SATA/SAS/SDD Hot Plug Hard Drive Bays for server node 1
- 1-15 15 x LFF SATA/SAS/SDD Hot Plug Hard Drive Bays for server node 2
- 1-15 15 x LFF SATA/SAS/SDD Hot Plug Hard Drive Bays for server node 3

Maximum Storage Capacity - 1x60 Model

Internal (2 SFF Drive Cage)	2TB (2 x 1TB SATA SFF)
Internal (60 LFF Drive Cage)	240TB (60 x 4TB SATA LFF)
Total	242TB

Maximum Storage Capacity - 2x25 Model

Internal (2 SFF Drive Cage)	4TB (4 x 1TB SATA SFF)
Internal (60 LFF Drive Cage)	200TB (50 x 4TB SATA LFF)
Total	204TB

Maximum Storage Capacity - 3x15 Model

Internal (2 SFF Drive Cage)	6TB (6 x 1TB SATA SFF)
Internal (50 LFF Drive Cage)	180TB (45 x 4TB SATA LFF)
Total	186TB

Technical Specifications

System Unit	Chassis Dimensions (H x W x D)	7.47 x 17.45 x 35.34in (18.96 x 44.33 x 89.97cm) NOTE: Rack chosen is required to have 1200mm to provide space for cable management arm at the rear of the chassis and host PDU in the rear of the rack	
	Weight (approximate)	Maximum	220lb (99.8kg) (all hard drives, power supply, and processor installed)
	Input Requirements (per power supply)	Rated Line Voltage	100 to 120 VAC 200 to 240 VAC
		Rated Input Current	For 1200 W Power Supply: 10 A (at 100 VAC), 4.9 A (at 200 VAC) For 750 W Power Supply: 8.9 A (at 100 VAC), 4.3 A (at 200 VAC)
		Rated Input Frequency	50 to 60 Hz
		Rated Input Power	For 1200 W Power Supply: 930 W (at 100 VAC), 1348 W (at 200 VAC) For 750 W Power Supply: 857 W (at 100 VAC), 824 W (at 200 VAC)
	Power Supply Output (per power supply)	Rated Steady-State Power	For 1200 W Power Supply: 800 W (at 100 VAC), 900 W (at 120 VAC), 1200 W (at 200 to 240 VAC)
		Maximum Peak Power	For 1200 W Power Supply: 800 W (at 100 VAC), 900 W (at 120 VAC), 1200 W (at 200 to 240 VAC) For 750 W Power Supply: 750 W (at 100 to 120 VAC), 750 W (at 200 to 240 VAC)
	Power Specifications	To review typical system power ratings use the HP Power Advisor which is available via the online tool located at URL: www.hp.com/go/proliant-energyv-efficient or www.hp.com/go/hppoweradvisor .	
	Power Supply Output (per power supply)	Rated Steady-State Power	
	System Inlet Temperature	Operating	50° to 95° F (10° to 35° C) at sea level with an altitude derating of 1.8°F per every 1000 ft (1.0°C per every 304.8 m) above sea level to a maximum of 10,000 ft (3048 m), no direct sustained sunlight. Maximum rate of change is 18°F/hr (10°C/hr). The upper limit may be limited by the type and number of options installed. System performance may be reduced if operating with a fan fault or above 86°F (30°C).
		Non-operating	-22° to 140° F (-30° to 60° C) Maximum rate of change is 36°F/hr (20°C/hr).
	Relative Humidity (non-condensing)	Operating	10 to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing.
		Non-operating	5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum

Technical Specifications

Altitude	Operating	wet bulb temperature, non-condensing. 10,000 ft (3048 m). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 1500 ft/min (457 m/min).
	Non-operating	30,000 ft (9144 m). Maximum allowable altitude change rate is 1500 ft/min (457 m/min).
Acoustic Noise		
Listed are the declared A-Weighted sound power levels (LWAd) and declared average bystander position A-Weighted sound pressure levels (LpAm) when the product is operating in a 23°C ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109).		
Idle		
L WAd		7.13 B
L pAm		57.39dBA
Operating		
L WAd		7.13 B
L pAm		57.43dBA
Emissions Classification (EMC)	FCC Rating	Class A
	Normative Standards	CISPR 22; EN55022; EN55024; FCC CFR 47, Pt 15; ICES-003; CNS13438; K22;K24; EN 61000-3-2; EN 61000-3-3; EN 60950-1; IEC 60950-1

NOTE: Product conformance to cited product specifications is based on sample (type) testing, evaluation, or assessment. This product or family of products is eligible to bear the appropriate compliance logos and statements.

HP Ethernet 1Gb 2-port 362i	Network Interface Compatibility	10Base-T/100Base-TX/1000Base-TX IEEE 802.3 10Base-T IEEE 802.3ab 1000Base-T IEEE 802.3u 100Base-TX IEEE 1588, IEEE 802.1AS IEEE 802.3az - Energy Efficient Ethernet (EEE)	
	Data Transfer Method	PCI Express v 2.1, 5.0 GT/s and 2.5 GT/s bus speeds and supports for x1, x2, x4 links widths (Lanes)	
	Controller	I350 Powerville	
	Network Transfer Rate	10Base-T (Half-Duplex)	10 Mb/s per port, 20 Mb/s Combined
		10Base-T (Full-Duplex)	20 Mb/s per port, 40 Mb/s Combined
		100Base-TX (Half-Duplex)	100 Mb/s per port, 200 Mb/s Combined
		100Base-TX (Full-Duplex)	200 Mb/s per port, 400 Mb/s Combined
		1000Base-TX (Half and Full-Duplex)	1000Mb/s per port, 2000 Mb/s Combined
	Connector	RJ-45	
	Cable Support	10Base-T	Categories 3, 4 or 5 UTP; up to 328 ft (100 m)
		10/100/1000Base-TX	Category 5 UTP; up to 328 ft (100 m)

HP Ethernet 10Gb 2P 544i Adapter	Data Transfer Method	Compliant to x8 PCIe Gen2 Specification
	Network Transfer Rate	X4 IB: 10 Gb/s (SDR), 20 Gb/s (DDR), 40Gb/s (QDR) 10Gb/s Ethernet: Full-duplex single lane XFI

Technical Specifications

	Connector	QSFP - IB SFP+ - 10Gb/s Ethernet
	Cable Support	IB: 10Gb/s NOTE: IB supported with addition of HP IB Enablement Kit HP copper and optical IB cables HP copper and optical SFP+ cables
HP Smart Array P420i Controller	Dimensions	Embedded
	Disk Drive and Enclosure Interface - Transfer rate	6Gb/s SAS (Serial Attached SCSI) 6Gb/s SATA (Serial ATA)
	SAS Connectors	2 internal 4X connectors
	Cache Memory Speed	1GB or 2GB FBWC DDR3-1333MHz with 72-bit wide bus
	Server Interface	x8 PCIe 3.0 operating at PCI 2.0
	SAS Speed	(8) 6Gb/s SAS links provide 4.8GB/s maximum bandwidth
	Cache Memory	72-bit 1GB FBWC or 72-bit 2GB FBWC
	Logical Drives Supported	Up to 64 logical drives with cache
	Host Memory Addressing	64-bit, supporting greater than 4GB server memory space
	RAID Support	RAID 6, 60 (Advanced Data Guarding) RAID 5, 50 (Distributed Data Guarding) NOTE: A minimum of 512 MB cache is required to enable RAID 5, 50, 6, 60 NOTE: HP Smart Array Advanced Pack (SAAP 2.0) is no longer required to enable RAID 6 & 60 (Advanced Data Guarding). However, controller must be in firmware version 4.68 (or later). RAID 1+0 (Striping & Mirroring) RAID 0 (Striping), RAID 1 (Mirroring)
Environment-friendly Products and Approach	End-of-life Management and Recycling	Hewlett-Packard offers end-of-life HP product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to: http://www.hp.com/go/green . To recycle your product, please go to: http://www.hp.com/go/green or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner. The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: http://www.hp.com/go/green . These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

Summary of Changes

Date	Version History	Action	Description of Change:
01-Nov-2014	From Version 10 to 11	Changed	Service and Support section updated
09-Jun-2014	From Version 9 to 10	Changed	Hard Drives, Networking, Insight Control, Tape Backup, and Basic and Remote Monitoring Power Distribution Units were revised.
13-Dec-2013	From Version 8 to 9	Changed	<p>Step 1A was removed from Configuration Information</p> <p>3G SATA MLC Hot Plug LFF & SFF Enterprise Mainstream Solid State Drives were removed from Hard Drives</p> <p>HP Power Distribution Units were removed from Additional Options</p> <p>HP Tape and Disk Storage Systems were added to Additional Options</p> <p>HP Basic Power Distribution Units, HP Remote Monitoring Power Distribution Unites, and HP Intelligent Power Distribution Unites were revised in Additional Options</p>
15-Nov-2013	From Version 7 to 8	Changed	Minor change made to the Hard Drives section only.
11-Oct-2013	From Version 6 to 7	Added	<p>HP 300GB and 600GB 6G SATA Value Endurance LFF 3.5-in Enterprise Boot Solid State Drives to were added Hard Drives</p> <p>Mainstream Endurance PCIe Workload Accelerators were added to HP PCIe Workload Accelerator Options</p> <p>HP Remote Monitoring Power Distribution Units was added to Additional Options</p>
10-Sep-2013	From Version 5 to 6	Changed	<p>HP Insight Management, Memory, HP Storage Controllers, HP Power Distribution Units, and HP Care Pack Services were revised</p> <p>HP HPC Linux Value Pack was removed from High Performance Clusters</p> <p>6G SATA Value Endurance Hot Plug LFF Enterprise Value Solid State Drives were added to Hard Drives</p> <p>HP Ethernet 10Gb 2P 561T Adapter was added to Networking</p>
13-May-2013	From Version 4 to 5	Changed	<p>Standard Features- Maximum Internal Storage</p> <p>Additional Options- HP Basic Power Distribution Units</p>
08-Apr-2013	From Version 3 to 4	Removed	Technical Specifications: Removed Integrated Lights-Out 3(iLO3) integrated on system board
		Changed	<p>Standard Features: Network Controller, Storage Controllers, Internal Storage Devices, Maximum Internal Storage, Interfaces and Form Factor sections.</p> <p>Optional Features: Updated HP Insight management</p>

Summary of Changes

			<p>section.</p> <p>Configuration Information: Updated Notes at beginning of section, Step 1, Step 1A, Step 2 and Step 3.</p> <p>Core Options: Updated HP Processors, HP Memory, HP Hard Drives, HP Networking and HP InfiniBand sections.</p> <p>Additional Options: HP Insight Software and HP Tape Backup sections.</p> <p>Memory: HP Memory section.</p> <p>Technical Specifications: Updated Weight in the the System Unit</p>
		Added	<p>Added SL4545 G7 3x15 model information throughout entire QS.</p> <p>Technical Specifications: HP Ethernet 10Gb 2P 544i Adapter section.</p>
01-Mar-2013	From Version 2 to 3	Removed	Additional Options: Removed T9074BAE, 452148-B22 and 436222-B21 from the HP Insight Software section.
04-Dec-2012	From Version 1 to 2	Changed	<p>Changes made to the following sections:</p> <p>Overview</p> <p>Standard Features: On System Management</p> <p>Configuration Information: Step 1, Step 2, Step 3</p> <p>Core Options: Hard Drives</p> <p>Additional Options: Added HP Care Pack Services</p> <p>Storage</p>

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Summary of Changes

For hard drives, 1GB = 1 billion bytes. Actual formatted capacity is less.